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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

1934

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and are not necessarily the official and final word on the subjects.

Vol. VI.

Washington, D. C., January 2, 1934

No. 1

Adding a Billion! An encouraging start is given to our New Year by the Annual Report of the Secretary, released to the public on December 15. It points out that agricultural conditions have improved as a whole over the Nation during the last six months, though this improvement has by no means been uniform.

"Gross farm income from 1933 production will be about \$6,100,000,000 the report estimates on the basis of figures available in October as to marketings and prices," says the Press announcement. "Payments to farmers for restrictions in agricultural production will increase the total to about \$6,400,000,000 as compared with \$5,143,000,000 received in 1932. Farm commodity prices from mid-March to mid-October rose 47 per cent."

In calling for a matching of progress in production with progress in distribution, the report points out that the quarrel in the matter of over production is not with science but rather with the incompleteness of its victories. Gains in technical efficiency if not supported by scientific economic adjustments, are apt to cause trouble. The remedy is not to put a brake on science, but to open new channels into which economic energy may profitably flow. The work of this Division is emphasizing improvement of quality, the growing of better crops at less cost, the development of disease-resistant sorts, or varieties suited to particular conditions, and the handling and transportation of such crops so that they will reach the market in excellent condition. This type of research tends to point the way for the grower to cut his acreage without sacrificing the returns from his crops.

Dr. Wm. D. Moore, wrote from Charleston, S. C. last month of a grower in that section who is getting more than a 30 per cent increase in yield of cabbage, and the best quality of his experience, all of which is attributed to a correction in his production methods as a result of our studies. Another grower who has not been able to get plants to grow on certain of his fields has become an enthusiastic convert to agricultural research following Doctor Moore's discovery of the deficiency trouble with the soil--a discovery made, incidentally, after working only 15 minutes with the soil samples brought in by the grower. Doctor Moore, you see, has thoughtlessly harmed these growers by increasing their production--but you will never be able to convince these men, or this editor, of that! Doctor Moore, so far as I am concerned, is on the side of the angels--and a reading of the Secretary's report would indicate that the Secretary stands squarely behind Doctor Moore, giving a pretty strong line of defence for the research worker.

"It is essentially a problem of distribution," the Secretary says in his report, along this line. "We have surpluses, in industry as well as in agriculture, largely because the laws that govern the distribution of income cause a polarization of wealth and poverty, a piling up of purchasing power at one end of the social scale. In consequence, a majority of the people spend all their money before they have satisfied their wants, while a minority satisfy their wants long before they have spent their money. There results an unemployed block of purchasing power which tends to be transformed into capital and to go back into production instead of entering the market for consumable goods. This makes the surplus saturation worse.

"Potentially, the purchasing power existing at any time equals the supply of goods; but it does not necessarily enter the market for those goods. To make it do so, it must be joined to need or desire. When purchasing power gravitates away from need or desire, it lies idle or runs to waste in speculation and bad investment. How much more socially intelligent it would be to redistribute purchasing power in such a way as to put it effectively to work. Unemployed purchasing power means unemployed labor and unemployed labor means human want in the midst of plenty. This is the most challenging paradox of modern times."

Commercial organizations who worry about the agricultural surplus and expenditures for research, appear to overlook the fact that, as the Secretary points out, we have surpluses in industry as well as agriculture--and that probably two-thirds of the increase in production during the past ten years has been due to mechanization originating with commercial interests. As long as there are thousands of people who need the things we produce, and can't get them, we must believe that the trouble is not with agricultural research.

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"Mention was made in a recent report of the use of a Bordeaux-oil spray to control leaf-curl and scale insects in peach orchards," he writes on December 9th. "Since this spray has been confused with one made up by adding a lubricating oil emulsion to Bordeaux mixture, the formula for preparing the Bordeaux-oil spray is given below:

"To make up 300 gallons of the Bordeaux-oil spray, place in the tank of the sprayer 40-50 gallons of water in which 18 pounds of copper sulphate has been dissolved. Then start the agitator and add 18 pounds of hydrated spray lime. As soon as the lime is thoroughly mixed, which will require only two or three minutes, slowly pour into the mixture 7-1/2 gallons of lubricating oil. After adding the oil the mixture should be pumped and agitated for about five minutes. Then, with the agitator still running, fill the tank with water and the spray is ready for application.

"Made up according to this formula, the resulting mixture is a 3-3-50 Bordeaux containing 2-1/2 per cent oil. When made up for dormant use on apple where a strong fungicide is not necessary, the copper sulphate and lime may be reduced to three pounds of each in 300 gallons of spray. Copper sulphate 3 pounds and hydrated lime 3 pounds in about 25 gallons of water will thoroughly emulsify 7-1/2 gallons of lubricating oil. A light paraffine oil having a viscosity of about 100 seconds is in general use in this section for making up the spray."

Discussing this spray in his report for the week ending November 25th, he wrote:

"This combination spray is the least expensive and one of the most efficient dormant treatments that can be used to control leaf-curl and scale in peach orchards. At the present prices of the ingredients used (copper sulphate, \$5.50 per cwt, hydrated lime, 70¢ per cwt, and lubricating oil, 14¢ per gal.) a tank of 300 gallons can be made at a cost of \$2.12. The cost of treating peach trees 10-years-old with this mixture is about four cents a tree."

In marked contrast to the low temperatures that prevailed the previous week, the weather from November 19 to 25 was unusually mild. Taking advantage of this, the dormant application for the control of leaf-curl and scale insects was commenced in the Purdue-Vincennes peach orchard.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

Writing on December 16th, he says: "Some time was spent during the past week in studying a disorder of grafted walnuts which has caused a loss of a number of young grafted trees in a Franquette planting near Portland, Ore. This trouble is characterized by rotting of the cortical tissues of the black rootstock just below the crown, resulting in girdling and death of the tree.

"No parasitic micro-organism could be found associated with this trouble, indicating that in all probability it is of a non-parasitic nature. It is suspected that these trees are grafted on hybrid black rootstocks which are probably more susceptible to winter injury than true Northern California black stocks."

On December 9th he reported that a root rot of the cultivated filbert, Corylus avellana, due to Armillaria mellea Vahl. was found during the week to be responsible for the death of a number of filbert trees located in a planting near Medford, Ore.

"A considerable number of trees in this orchard are so badly infected with the oak root fungus that in all probability they will die," he writes. "As far as can be ascertained by a perusal of available literature, Armillaria mellea Vahl. has not been reported heretofore on the cultivated filbert, Corylus avellana, in the Pacific Northwest."

Howard E. Parson, Spring Hill, Ala.

"In the Stuart block sprayed with 3-4-50 Bordeaux mixture two times against leaf spots, the trees whether sprayed early or late in the season retained their foliage much better than unsprayed trees," he writes under date of December 15th.

"At the very end of the season it was observed that the trees sprayed early were the last to defoliate. The harvest from these plots was of best quality from the trees sprayed early, next best from the check trees, and poorest from the trees sprayed late in the season."

R.R. Fares Reduced A further reduction of 10 percent in round-trip coach fares will be put in effect January 2 by all western and southern western railroads, says a Chicago report to the New York Times. This will bring the round-trip coach rate to 1.8 cents a mile each way with a 10-day return limit. It is an outcome of the very gratifying response by the public to the reduction of basic fares on December 1 this year.

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"The business conditions throughout the State have been stimulated by the record cotton crop and the acreage adjustment payments," he writes on December 2. "The crop this year will bring \$76,000,000 to Arkansas cotton growers in addition to the \$17,571,000 paid by the Government for acreage adjustment.

"The release of this money is having an immediate effect on business. Federal Land Bank collections have increased very appreciably, and employment figures show a gain of 28.8 per cent as compared with last year. Gasoline and tobacco sales have increased, and Arkansas is reported to lead the United States in the number of new automobiles purchased."

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory on December 17, he reports that the amount of loss due to rot in storage has increased very markedly since the November tests.

"Most of the early varieties are now entirely gone. We have some from one bog only. Most of the late berries are beginning to decay rapidly although there are great differences between berries of the same variety from different bogs.

The effects of spraying are now very apparent. In some instances where berries from check plots are half or more rotten and make a soggy, sticky mass, the berries from plots sprayed two or three times are dry and clean looking, though they may contain from 10 to 15 per cent of partly rotten berries."

M. A. Smith, Ozark Fruit Disease Laboratory.

"There seems to be some indications of a pick up in the fruit industry in the Ozarks," he writes December 9. "This is particularly true among the growers of smallfruits. Many acres of Ozarks timber land are being cleared for planting strawberries next spring.

A considerable improvement in the care given grape vineyards has been reported by farm agents from many sections. Vineyards long neglected because of low prices for their products are being cleared."

FRUIT AND VEGETABLE UTILIZATION STUDIES

Eggplants The eggplant needs to be understood in order to keep its old friends and make new ones. Since the fruit is always eaten in the immature state, C. W. Culpepper and H. H. Moon decided it was best to study its composition at different stages of maturity in order to determine whether it would be a more desirable food at one stage than another.

An effort, too, was made to ascertain the cause of the great shrinkage that often occurs during cooking, as well as the eggplant's tendency toward excessive softening, resulting in an undesirable texture or consistence. A bitterness that sometimes detracts from the quality of the product and the discoloration of material that takes place during the cooking process or when exposed to air were also studied, the table quality and food value of different varieties compared, and the effect of differences in stage of maturity upon the palatability of the product was determined.

And now these interesting studies are available under the title of "Composition of Eggplant Fruit at Different Stages of Maturity in Relation to Its Preparation and Use as Food," in the Journal of Agricultural Research for November 1, 1933 (Vol. 47, no. 9.).

ZINC CURE FOR PECAN ROSETTE

A warning has been issued as to the need of caution in applying zinc cure for pecan rosette. While zinc sulphate application is a promising treatment, growers should not overdo it. On soils some zinc sulphate may act to increase the acidity of the surface soil and also of the subsoil, and the treatment is still so new that there has not been time to determine whether continued heavy applications of the zinc salt may prove injurious. Growers should treat rosetted pecans, of course, but move cautiously and keep within the limits of the treatments already tested. Lime will usually correct acidity in surface soil, but if the subsoil should be made too acid it might be expensive or impracticable to correct the damage.

So far, zinc sulphate has been found helpful when applied as a spray, either separately or as an addition to Bordeaux mixture. The salt may also be used in holes bored in the trunks of the trees, or it may be applied as a top dressing on the soil under the trees. The quickest results follow spraying with 1 pound of zinc sulphate to 50 gallons of water on young growing shoots. At this concentration the spray does not injure the foliage. Three applications at thirty day intervals beginning in April have been effective.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Spray Residue Tolerance, 1934 A tolerance for lead that may be present as spray residue on fruit to be harvested in 1934 has been announced by the Acting Secretary of Agriculture. The tolerance of 0.01 grain per pound previously set for flourine and for arsenic will remain in force. The notice reads:

"In the Department's announcement of June 20, 1933, a lead tolerance of 0.014 was forecast for the 1934 season. In the absence of a commercially feasible lead arsenate substitute it is evident that despite the most effective washing method a material amount of fruit will not meet the tolerance of 0.014 grain lead per pound. Accordingly, a tolerance of 0.019 grain lead per pound of fruit is announced for the 1934 crop. It is hoped that by the end of the 1934 season the various lines of research now under way will enable the industry to meet a tolerance of 0.014 grain per pound the following year and, perhaps, to eliminate lead entirely as is now being done in vegetables.

"There are no indications of any additional knowledge on the toxicity of flourine which call for a change in the tolerance of 0.01 grain per pound announced June 20, 1933. Present indications are that flourine is not as easily removed as was earlier thought to be the case.

"The tolerance for arsenic will remain at 0.01 grain arsenious oxide per pound of fruit."

Farm and Home Drying of Fruits and Vegetables. In conformity with our general policy of making possible the widest and most efficient use of our products, the NEWS LETTER is pleased to announce that Dr. J. S. Caldwell has turned out a bang-up revision of Farmers' Bulletin No. 984, "Farm and Home Drying of Fruits and Vegetables." Tell your friends and customers about it!

The bulletin's 46 pages and 6 text figures contain a wealth of practical information on the subject, especially concerning the two general methods of preserving fruits and vegetables--canning and drying. A number of driers are described and directions for their construction given. Directions for the preparation, drying and subsequent storage and care of the dried products are given fully for each of the more important fruits and vegetables.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Dr. Gerhardt attended the meetings of the Washington Horticultural Society with the writer and Mr. Ryall," he reports December 12. "The meeting was well attended. Mr. Ryall and the writer also attended the meetings of the Northwest Cooperative Oil Spray Project in Portland on December 7th and 8th. Considerable emphasis was placed on interference with tree metabolism through the continued use of any oil spray and not over the equivalent of three oil sprays of maximum strength (1 per cent mineral oil or 1/4 per cent fish oil) was recommended.

"Of the season's experiments for codling moth control, arsenate of lead with fish oil, and with mineral oil when ovicidal action is desired, was still upheld as the most satisfactory measure, through cryolite and barium fluosilicate gave good results and would be satisfactory were it not for the difficulty of removing flourine residues.

"Nicotine sulphate with mineral oil, excepting in Southern Idaho, had not given satisfactory results and when used with mineral oil in the second brood spray over earlier arsenic and lead coverages, rendered these materials very difficult of removal.

"Nicotine tannate as well as nicotine and Bentonite gave very poor control. Manganese arsenate is not to be recommended. Calcium arsenate with various safeners such as aluminum, zinc or iron sulphates and hydrated lime, gave promise in control as well as very remarkable improvement in foliage when compared with arsenate of lead. Calcium arsenate gave serious injury when used with fish and vegetable oils.

"From these two conferences it is to be seen that arsenate of lead is to be relied upon during 1934 both in early and late sprays, and mineral oil will be avoided as much as possible in second brood sprays."

F & V gets The fruit and vegetable industry received the first code
first code to be approved under the President's order delegating
 supervision of the codes affecting agricultural and food
products to the Secretary of Agriculture. This was the code of fair
competition for the imported date-packing industry.

The imported date packing industry, established at widely scattered points in the United States, handles approximately 65 per cent of all the dates imported. The industry has an invested capital of \$8,000,000.

FRUIT AND NUT PRODUCTION

NATIONAL CITRUS FRUIT STABILIZATION. Those of our workers who are interested in the progress of the Citrus industry will be gratified to learn that the Agricultural Adjustment Administration announced on December 22 that the operation of a national citrus fruit stabilization plan has been made possible with approval by Secretary Wallace of a marketing agreement for the Texas citrus fruit industry, the last of three agreements involved in the program. Marketing agreements for oranges and grapefruit for the California-Arizona region and for Florida have already been approved, of course, and are in effect.

"Under the national plan," says the announcement by the Press Service, "proration of shipments is made possible. The agreements seek to increase returns to growers through regulation of supply. Each agreement contains the same general provisions, and is made mandatory upon all shippers in the regions by licenses.

"The license for the Texas agreement becomes effective on December 26, at 12:01 a.m.

"The agreement was signed by shippers handling 87 per cent of the total commercial movement of citrus fruit from Texas during 1932-33.

"A control board of seven members is established by the agreement. One member will be chosen by the Rio Grande Valley Exchange, one by the Texas Citrus Growers Exchange, one by a majority vote of all other cooperative groups, three by shippers not affiliated with any cooperative, and the seventh member by the other six members themselves.

"Every shipper must apply for an allotment in order to secure an allotment to ship. Each licensee and every grower of citrus fruit not controlled by any licensee may apply for and secure prorate basis. Allotments of quantity as to variety, grade and size are to be made.

"For licensed shippers the prorate basis will be the percentage which each has authority to ship or to which he has legal title or on which he has paid 20 per cent of the purchase price--the whole being taken as the shipper's percentage of the total Texas crop. Penalties for exceeding allotments are provided in the agreement. Allotments are exchangeable under certain restrictions. The agreement also carries trade practice regulations which prohibit breach of contract, misleading statements, and brokerage fees."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"From the grading and cracking tests we have made so far, "he writes December 9, "it seems that such practices as pruning, nitrogen fertilization, etc., which have stimulated the growth and leaf area of the trees and increased the size of the nuts, have resulted in poorer filled and hence poorer quality nuts than those produced under what normally would be considered less optimum conditions. Because of the drouth which began soon after the nuts had started to fill, those treatments which normally would be expected to produce the best quality of nuts have in some cases produced the poorest."

Geo. P. Hoffmann, Meridian, Miss.

"Our cover crop of vetch and Austrian winter peas is attracting much and favorable attention," says the report of December 9. "Evidence of interested farmers and grove owners seems to increase from day to day, and it is generally thought that if the work which is conducted at the Seaton consisted of nothing more than the soil-building program now under way the time and effort would be well spent, and would many times over pay."

AMERICAN WALNUTS IN GERMANY

Mike Hagerty, of our field staff, who sometime back took pen in hand to scold a prominent American candy manufactur for boasting of his use of foreign-grown materials in his candy, and who intimated that the said manufacturer might do very well to consider home products--especially walnuts--will be delighted to learn that Germany is beginning to appreciate our walnuts, at any rate.

At least we have the word of Consul Lester L. Schnare, Hamburg (through the Department of Commerce) that approximately 80,000 sacks of American walnuts were available for the Christmas trade, which is an amount considerably greater than that reported for any of the European varieties. Consul Schnare adds that because of crop failures or damage as the result of unusually heavy rains during the growing season, the European walnut crops generally are expected to be much smaller in quantity and poorer in quality than usually.

Incidentally, reports indicate that Germany is striving for a self-sufficient agriculture, the total agricultural area for 1933 being about the same as that of 1913 within the present boundaries--72,561,000 acres. There has been a marked increase in field vegetables of late years.

ADMINISTRATIVE NOTES

Advance of cash for travel, etc. Where necessary or desirable, advances of cash are made by the Department's Disbursing Office to cover travel. Such advances are secured either by the ordinary surety bond, or by the retirement fund of the employee concerned. Where the amount credited to an employee in the retirement fund is not sufficient to cover the advance of funds requested, a bond must be secured from some bonding company approved by the Treasury Department. The premium for a \$1,000 bond is about \$5.00 a year, which must be paid by the employee as the Government has no legal authority to pay such charges.

While the regulations covering advance of funds with retirement as surety limit expenditures to proper expenditures for subsistence on official travel, this has been interpreted to cover items other than subsistence where they do not make up more than 15-20 per cent of the account. If they exceed 20 per cent, then the employee must secure a bond in the usual manner instead of depending upon his retirement fund money as surety. Surety company bonds, of course, cover any expenditures which may be authorized within the limits of the bond total.

For those holding trip letters of authorization, advances will be limited to necessary cash expenditures thereunder. Money advanced under a continuing letter of authorization will be in the nature of a revolving fund as a check will be drawn in reimbursement of each expense account submitted. The amount of the cash advance under such conditions is limited to not more than the sum which will be required to meet cash expenditures during the time reimbursement of the previous expense account is awaited. For this reason, applications should not be made for a larger amount than will be necessary to cover, say, expenses for a period of from six weeks to two months.

Refunds of cash advances under trip letters of authorization must be made within two days following return from trips, accompanied by the traveler's reimbursement account. Those holding continuing letters of authorization may retain cash advances continually so long as the requirements for the advances exist. However, where conditions call for reduced cash expenditures, whether permanently or during any season of the year, a refund of the amount not required should immediately be made by check or money order drawn in favor of the Disbursing Clerk of the Department. Additions to cash advances may be secured when needed by submitting applications for the amount required, accompanied by brief explanations as to the need for the increase.

Applications for cash advances on surety bonds are made on Form 1038; those to be secured by the Civil Service Retirement Fund, on Form 1038-A. Surety bonds may be secured in the field or, if desired, Mr. R. K. Swartz can arrange to secure them here in Washington for you--if you will send him check for the \$5.00 premium!

ADMINISTRATIVE NOTES

Property Inventory The inventory of property for the Division must be submitted to the Chief of Bureau as promptly as possible after January 1. Mr. Swartz is mailing to employees in charge of property a list to help in preparing such inventories for our various projects and stations.

This list shows the inventorial property charged and particular care should be taken to check up piece by piece the various items of property in your care with a view to adding any items which may have been omitted from the list, and to supplying comments regarding any which it appears should be dropped for one reason or another. The list, of course, includes only items purchased up to December 31, 1933. Items from January 1 on, go on the inventory for next year.

It is especially important that the list be carefully completed to show the disposition of items transferred, lost or sold, and the total remaining on hand as well as any additions.

All action authorized by boards of survey in connection with the disposition of Government property should be accomplished promptly and the reports completed and returned with your inventory list. If the board of survey is for the calendar year 1933, all property to be dropped must have been disposed of before December 31, and the date of disposition shown on your report.

Loss certificates should be submitted in DUPLICATE for all property which can not be located, and these statements must not only include a statement as to the efforts made to find the lost items, but also whether or not they were being used in official work at the time, and what precautions had been taken to prevent their loss or theft.

Worn out property at stations for which no boards of survey have been appointed may be dropped on loss certificates, with an explanation, provided the original value of the equipment is not high, and there are not many such items to be dropped. In all cases where any considerable quantity of property is worn out or broken, it is necessary that a board of survey be appointed to handle the matter and arrange for the destruction of the worthless items.

Incidentally, it should be remembered that the regulations of the Department provide that where public property which has been condemned is offered for sale by authority of the Department, it shall not be purchased, either directly or indirectly by any employee formerly accountable for it, using it, or in any way connected with the condemnation or sale of the items.

ADMINISTRATIVE NOTES

Standard Lease Form. In accordance with a decision of the Comptroller General, and instructions from the Department's Director of Personnel and Business Administration, the "Standard Form of Lease" will hereafter be used for the rental of all real estate where the rental value exceeds \$100.00 a year. Where the rental is less than \$100.00 a year and the term of the lease does not exceed one year, the use of the less formal "Short Term Rental Agreement" may be continued.

Where the Standard Form of Lease is to be executed, the rental being \$100.00 or more per annum, our Business Office should be supplied with the following data in order that the Solicitor of the Department may be furnished with the necessary information for preparing the lease:

Name and address of lessor (including name and address of building):

Consideration: (Outline briefly the obligations of each party).

State if payments are to be made monthly, quarterly, semi-annually or annually.

Duration of lease exclusive of option (date effective:
(date terminates:

Renewal option: (Give final date)

Facilities included in rental:

Location:

Proposed annual expenses: (Estimated expense for labor, supplies, equipment)

Description: (Brief outline giving area, buildings, character of land, etc.)

Purpose: (Brief outline of specific activities to be conducted)

Total area: (Square feet)

Number of Rooms:

Square feet used for: (1) Office:
(2) Storage
(3) Equipment

Persons occupying space: (1) Continuously:
(2) Intermittently.

There should be furnished also a statement from the Postmaster to the effect that there is no space available in either government-owned or government-rented premises which could be used for the purpose intended.

The information outlined above should be furnished as much in advance of the effective date of the lease as practicable, in order that it may be prepared and executed prior to that time.

Vol. 6, No. 1

January 2, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
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NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

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Vol. VI

Washington, D. C., January 15, 1934

No. 2

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Record Rainfall Reporting on observations during the December 10-23
st Seattle, Wash. period, H. C. Diehl writes from the United States
Frozen Pack Laboratory at Seattle, Washington: "The
Puget Sound area of the Pacific Northwest has been deluged with rain
during this period. All-time records for December precipitation at
Seattle have already been exceeded by four inches, and the 1902 annual
rainfall record of 45 odd inches stands a good chance of being upset,
since some 43 odd inches have already fallen, and there is still more
than a week to go.

"Intercity travel has been completely disorganized, both by rail
and by bus. On the 22d, it was impossible to go to Tacoma or Mount Ver-
non, south and north of Seattle, except by most circuitous byways, re-
sembling in most cases pools of mud rather than roads. Olympia, Aber-
deen and Chehalis were completely surrounded by flood waters which have
everywhere in this area caused tremendous physical losses, a number of
deaths, and which have spread suffering and misery among thousands. The
mountain passes have been closed by heavy snowfall (60 inches lies on
Stevens Pass), by slides, or are unapproachable due to floods in the
valleys.

"The city of Seattle itself has not been hurt much except for two
dozen damaging slides which have wrecked and buried buildings. However,
the whole White River Valley south of Seattle is an inland sea from
three to fifteen feet deep, with little hummocks here and there where
slight grade elevations occur, dotted with houses and farm buildings.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash. (continued)

"Damage to tillable ground cannot yet be determined.

"The December 10-23 period was made interesting for the writer by three meetings with representative groups interested in frozen pack: The Western Washington Horticultural Association in Bellingham, Wash., where I was caught in a snow storm and ice-covered roads; the Transportation Club in Seattle, Wash.; and the Ellensburg Chamber of Commerce, in going to which meeting I sat up all night in flood-stalled coaches and hoped that bridges and right-of-ways would not flow away under me.

"I had exhibits of frozen pack fruits and vegetables on each occasion, which seemed to be a source of much interest to the groups mentioned. The Ellensburg samples I carried (lugged is the true word--and in its worst and most painful interpretations!) there in two suitcases which by morning and after transfer here and there, seemed each to weigh twenty tons! An informal roundtable discussion took place at each of the meetings."

Frozen-Pack in Annual Report. Incidentally, the frozen pack investigations are given quite a prominent spot in the annual report of the Chief of the Bureau of Plant Industry for 1933. Doctor Taylor placed on record that in the investigations of the frozen-pack method of preserving fruits it has been definitely proved by our investigations that very rapid freezing as employed in the "quick freezing" methods is not only unnecessary but is sometimes detrimental to quality. With fruits packed in small retail containers it has been found that the best quality in most cases, as well as the greatest economy in cost, is attained by freezing at a temperature of 10 to 15 degrees F. When the fruit is packed in barrels, a temperature of about zero has been found desirable, on account of the larger mass and the necessity of its being completely frozen before deterioration sets in.

The importance of giving the public the results of our findings in this particular field of frozen-pack work, lies in the fact that such publicity will go a long way to dispel promptly the general impression that expensive special equipment for very rapid freezing is essential in the use of this method of preservation. As a matter of fact, the facilities available in practically every cold-storage plant can be satisfactorily utilized, the limitations of frozen-pack being in problems of distribution rather than in the use of particular methods of freezing.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"It is getting to be the time of the year when interesting things happen with pears in storage," he writes in his report for the December 13-28 period.

"Flemish Beauty and Bosc stored at 34 and 36 degrees have 'gone dead.' The change in the nature of the pear whereby it fails to ripen properly comes relatively abruptly when stored at these temperatures. When taken from storage in late November, they ripen with quite a satisfactory texture, but by December 15, they do not. In this connection, Dr. Gerhardt and Mr. Ezell are securing some interesting data with respect to the action of enzymes during this period. The whirr of Mr. Ezell's thermo-cradleized-enzymatic-meter has been singing in the laboratory almost constantly since before pear harvest.

"Delicious storage withdrawal was made during the week of December 19th, and examination after ripening has been made this week. Delicious and Red Delicious strains from Leavenworth indicate that during 1933 pickings made as late as October 19th were not sufficiently mature to give the best of texture and flavor. At this time water-core was developing quite seriously.

CROP PHYSIOLOGY AND BREEDING INVESTIGATIONS

Perrine A note by Mr. T. Ralph Robinson, states that commercial
"Lemon" plantings of the Perrine "lemon" are now under way in
Florida, where it is being recommended only for sections
relatively free from frost.

The commercial varieties of the lemon, of course, have never proved adapted to culture in the humid climate of Florida. This is due in a large part to the fact that the lemon is susceptible to a fungous disease known as Citrus scab. The common lemon in Florida also has the disadvantage of producing oversized fruits, undesirable to the trade.

By crossing the small Mexican or "acid" lime with the Genoa lemon, Dr. Walter T. Swingle and his associates have secured a hybrid which is immune to Citrus scab and yet has the desired shape and size of the best commercial lemons. Although the lime parent is susceptible to a troublesome disease known as lime withertip, affecting both fruit and foliage, the hybrids is free from this disease.

It has been named the "Perrine" lemon, in honor of Dr. Henry Perrine, the pioneer horticulturist of southwestern Florida, who introduced the lime from Yucatan.

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

Writing on December 28th, he mentions that he had recently spent a few days in the avocado orchards in southern California.

"The avocado crop in general is light this year," he writes, "although it is good on individual trees and in some orchards it is much better than in others. Trees of most varieties have a decided tendency to fruit on alternate years, although this did not seem to explain all the variations between trees this year. During my short trip I was not able to explain the heavy and light crops of neighboring trees and orchards..."

"Fruit tree roots at Chico were continuing growth on the 19th, ten days later in the season than activity was stopped by low temperatures last year. We have not had any unusually cold weather so far this winter and there has been a good rainfall."

Small Fruit Production The Department's DAILY DIGEST quotes some interesting data released in connection with the 1930 census, concerning small fruit production. "Tangipahoa Parish, Louisiana, led the entire country in the value of small fruits harvested in the United States, according to the census of 1930, principally because of its commanding place in the production of strawberries," says the newspaper item summarized. "Plymouth County, Massachusetts, was second (principally due to cranberries); Pierce County, Washington, third (owing its position chiefly to raspberries); Los Angeles, Calif, and Hillsborough, Fla., fourth and fifth (principally strawberries. This release gives the 50 leading counties based on the value of all small fruits harvested. Twenty States were represented in the list, Oregon leading with six counties."

George F. Waldo, Corvallis, Ore.

Writing on December 23d, he says: "The examination of the canned strawberries from selections proved to be very encouraging. Twenty-three were promising, and of this number eleven had promise from the field standpoint of being worthy of sending out for further trial. The others had defects of various sorts, and should not be sent out for trial.

"Activities have been of a more or less miscellaneous nature during the week, in connection with examination of canned strawberries and raspberries, with further studies of fruit bud formation in brambles."

FRUIT AND NUT PRODUCTION

Consumer Education The NEWS LETTER's editor happened to be visiting friends during the Holidays when a visitor brought in four fine Oriental persimmons as a gift. They were still quite firm, and the editor, in spite of his ignorance of the subject, ventured to advise that they be placed aside until quite a good bit softer before they were eaten. The "sweet" varieties, of course, may be eaten when quite hard, but the astringent sorts must become thoroughly ripe to avoid the "pucker," which is of varying degrees of severity at different stages of maturity.

The fruits were so attractive in appearance, however, that the women folks of the family could not resist sampling one immediately. It happened to be one of the very astringent sorts, and nowhere near thoroughly ripe! Fortunately, my comments had prepared the samplers for the shock and so the persimmon's reputation is not permanently ruined. I am hoping that the remaining fruits will be left untouched until they have almost reached the jelly stage--when they may be eaten with a spoon. If this is done, my friends will learn that peach and apricot marmalade does grow on trees---for the best of the soft varieties of Japanese persimmon have, when fully mature, a pulp so soft, sweet and melting as to suggest a marmalade made of peaches and apricots.

This experience leads to the thought that all of us who depend in one way or another for our livelihood on the growing and handling of fruits and vegetables have a sort of added responsibility in the shape of consumer education. We need to take advantage of the opportunities we may have to aid in seeing that fruits and vegetables are utilized in a manner to bring out the best that is in them.

"Growers of avocados, often incorrectly called 'alligator pears,' would do well," said Mr. T. Ralph Robinson of our Crop Physiology and Breeding section to a newspaper man some years ago, "to send the fruit to market in printed wrappers which would instruct the purchaser in its use and emphasize that the fruit should not be served or eaten until it is soft throughout. The attempt to eat an unripe avocado is not only disappointing, but may be so distressing as to discourage any further purchases of this excellent fruit." This would appear to be pretty good advice for growers of Oriental persimmons, too.

It may be, indeed, that failure to attend to this detail of consumer education has had something to do with the rather slow growth in the use of Oriental persimmons in this country, although we now have some 250,000 trees here, of which perhaps 50 percent are in bearing.

(continued)

FRUIT AND NUT PRODUCTION

Mr. H. P. Gould, who has lately rather thoroughly revised his multigraphed circular on "Oriental Persimmons," points out that the Japanese persimmon is far from being a new fruit in this country. The earliest introduction commonly recognized is that of 1856, when Commodore Perry sent seeds from Japan to Lieutenant Maury. These seeds were planted at the Naval Observatory in Washington and some of the trees fruited in 1860. So far as known, none of them were distributed, and according to the report of the United States Pomologist for 1887, none of the trees were living at that time.

In 1863, William Saunders, then horticulturist of the U. S. Department of Agriculture, imported seeds which were planted on the department grounds in Washington. Some of the seedlings were later distributed for testing. Subsequent to these introductions of seed, trees of named varieties were imported from the Orient, mostly from Japan, and gradually a good many different sorts became established in the United States.

"The Oriental persimmon is sometime classed with subtropical fruits," says Mr. Gould, "and while it is grown in Florida and California in sections where citrus and other subtropical fruits are grown, the tree is deciduous, that is, it sheds its leaves like the apple or peach, and in its range of distribution in its northern limits, it frequently endures temperatures of 10 to 15 degrees F. above 0, or even lower than this."

In this country the fruits of the Oriental persimmon are used mainly in the fresh state, being eaten out of hand, or with a spoon, depending on the condition and consistency of the persimmon at the time. A peasant way to use the fruit is to chill it in an ice box or refrigerator, after the fruit reaches a soft jelly-like condition, and then eat it as a breakfast fruit with cream, and a little sugar if desired.

"The use of Japanese persimmons in other ways, however, than in the fresh state has been given some consideration," Mr. Gould tells us. "As flavoring for ice cream, the pulp may be used the same as peaches, strawberries, and other fresh fruits; also in making marmalade, in puddings, salads, and in other ways. In the Orient, and especially in China, great quantities of the Tamopan variety are frozen in the open air and held for transporting and marketing in a frozen state during the winter months. Large quantities of the fruit are also dried and held in this condition for future use. Drying has been practiced to a limited extent in California, though this method is not common."

FRUIT AND NUT PRODUCTION

Walnut
Pollination The Annual Report of the Chief of Bureau for 1933, devotes a paragraph to the work in connection with artificial pollination of Persian walnuts. This interesting phase of our work has been mentioned from time to time in the NEWS LETTER and lately we happened across a few more details of the project, which has for its object the solving of the problem of irregular bearing and non-bearing in many California orchards.

The general plan seeks to determine the factors influencing the set of nuts and it has already been found (1) that 16 of the California varieties are self-fertile and inter-fertile, this information being of much importance to growers as it shows that lack of bearing in these varieties is not due to sterility or intersterility; (2) it has been shown that dichogamy is prevalent and is responsible for much of the light bearing and non-production in the leading walnut varieties; (3) detailed knowledge of the behavior of varieties as to dichogamy and coincidence of bloom has been obtained, permitting growers to increase yields greatly by the interplanting or top grafting of pollinizers into the trees; and (4) methods have been worked out for the artificial pollination of walnut orchards on a commercial scale.

When these experiments are completed and the results commercially applied walnut growers will be able to avoid loss of crops due to dichogamy while pollinizers are coming into bearing. Experiments on 100 acres of walnut orchards showed that in every instance the yield on the plots artificially pollinated was greatly increased over that obtained from the adjoining checks.

The increase was as high as 194 percent under some conditions. The increase in yield per acre of artificially pollinated trees of different ages varied from 141 pounds to as much as 3,084 pounds. The value of the increased yield per acre resulting from the artificial pollination varied from \$25.62 to \$429.00. The cost of artificial pollination varied from \$1.46 to \$3.00 per acre.

In some of the orchards in which these tests were conducted, the increase in yield resulting from the artificial pollination was sufficient to produce a profit for the first time in the history of the orchards involved. In all others the profit was increased.

The necessity for cross-pollination in some Persian walnut varieties is not because of self-incompatibility, but because the staminate and pistillate blossoms of the individual varieties do not reach maturity simultaneously. Similar results to those mentioned above can be obtained only when the varieties in the orchard are such that pollen is not available when the pistillate blossoms have developed.

POTATO INVESTIGATIONS

Potato Storage The Press Service of the Department has distributed an item from the Bureau of Agricultural Engineering stating that by insulating gable ends and roofs of bank-type potato storage houses, some farmers in Maine are storing 50 percent more potatoes on given floor spaces than is possible when they use only the basements of uninsulated structures.

"These farmers are piling potatoes 16 feet high, instead of 8 to 10 feet as is the custom when using only the basement for potatoes and the upper part to store farm implements. Insulated houses, if ventilated effectively, afford better control of temperature and humidity than uninsulated types.

"In building new potato houses of the usual one-and-one-half story height, farmers, if they insulate the upper parts, are able to cut the lengths of buildings 20 to 35 percent without reducing the Storage capacity. The savings in excavations, concrete and lumber for the shorter buildings usually cover the costs of insulating. No upper floors are used in the new houses and only enough framing to prevent spreading at eaves and to provide runways for handling potatoes brought in through the upper doors.

"The practice of storing implements in the upper parts of storage houses is objectionable," the announcement adds, "because the moisture from the potatoes causes parts of the machinery to rust."

Good natured Rivalry, etc. One of the NEWS LETTER's Florida correspondents writes of an incident which happened at a display of ornamental plants of the State. A visitor from another section of the country was inspecting the exhibit and making extensive comments on the various plants shown. It seemed that his State produced everything on exhibit--but, of course, in much finer specimens.

"What is this?" he asked, finally, pointing to one of the newer ornamentals.

"That," replied the very much wearied attendant, "is Arterio-sclerosis."

The visitor nodded. "Oh, yes," he agreed. "We have that, too." For the first time the attendant actually smiled.

"I think that is very likely," he replied, gravely.

BULB INVESTIGATIONS

To the somewhat frivolous query, "If one plants a kiss, what comes up?" a certain expert on bulbs and such things is reported to have replied, promptly, "Tulips!" At all events, they seem to be planting other things besides--er--tulips at the U. S. Bellingham Bulb Station, and among the things coming up are many new lily hybrids, seven of which have already been passed out to nurserymen.

Lily breeding has been considered a side issue at the Bellingham station but it begins to look as though the tail might be able to wag the dog shortly. The caudal appendage may not be able to get away with it, but Dr. Davit Griffiths' talk before the Horticultural Section of the American Association for the Advancement of Science on December 29 at Boston, indicates that the results being secured from the lily breeding work may be as voluminous and important as those of any other line of endeavor there.

The seven new lilies are the Shuksan, Kulshan, Sacajawea, Douglas Ingram, Star of Oregon, Peter Puget, and Cyrus Gates; the first five being crosses between the Humboldt lily and the leopard lily. Peter Puget is a leopard lily x Parry cross. And Cyrus Gates has the same parents as the first five. All but the last two are now offered for sale by lily growers.

An effort has been made to get yellow lilies--and has succeeded, as Doctor Griffiths now displays a whole series ranging from the lemon shade on one hand to a deep glossy orange on the other. Work along this line has been so encouraging that it appears to justify the claim that this lily breeding work is capable of yielding continued progress such as is wrought so marvelously in the daffodil. It also justifies the prediction made some years ago that the time might come when the wonderful progress made with the tulip would be duplicated with the lily.

One remarkable seedling has resulted from reciprocal crosses made in 1918 in Virginia between Lilium speciosum magnificentum and L. speciosum melpomene. From a pound of seed produced, half of which we grew ourselves, one plant was grown which has remained of fine color with no trace of mottling, and has been pronounced by some to be the best thing on the place. Four or five other selections possessing vigor and even larger flowers are badly mottled. If the foliage of this new and promising plant remains clean, it is going to be one of Doctor Griffiths' best bets.

Doctor Griffiths referred, incidentally, to daffodils, Dutch iris, English Iris, Crocus and squills--but lily breeding occupied the spotlight. In addition to the seven lilies mentioned above, the Bellingham station has nine others which have been regarded as of sufficient importance to be given names, and are now being propagated.

FRUIT DISEASES

Lee M. Hutchins, Fort Valley, Ga.

Writing on January 6, he reports: "Peento peach trees on the Laboratory grounds are showing numerous open blooms. The winter has been too warm, and we are worried about a possible recurrence of prolonged dormancy unless continued cold weather sets in soon."

G. A. Meckstroth, Chadbourn, N.C.

"As a result of dry weather (Taking the year 1933 as a whole, the rainfall deficiency based on the 8-year period 1924-32, is 12.28 inches) there has been practically no setting out of new strawberry fields, and most of the plants that were set out to fill in missing spaces in the old fields have died," says the report of December 30th.

"The old fields have suffered considerably, and the plants are not developing a root system such as would be developed under more favorable conditions; the production of adventitious roots as well as feeder roots on the adventitious runner roots is much reduced."

J. R. Cole, Sireveport, La.

"One interesting point about our 1933 weather here was the fact that we had 64 inches of rain," comments the report for the week ending January 6th.

"That was 20 inches above normal and 25 inches of that amount fell in July. That July rainfall perhaps partially accounts for the finding of scab on the Schley variety for the first time, so far as I have been able to determine, and the serious injury caused by scab to the Delmas variety. The above instances were in the Sireveport area.

"The Delmas variety has been scabbing severely in the East Texas region for several years and now the Schley variety is scabbing there also. However, rainfall cannot be the chief factor involved, because the annual rainfall for Winona, Texas, located in the eastern part of Texas, is only about 35 inches. Winona is the place where the Delmas and Schley are scabbing."

REDUCED RAILROAD FARES. In connection with the rather frequent announcements being made these days of special rates for railroad travel, our workers should remember that our official regulations provide that "Through tickets, excursion tickets, reduced rate round-trip or party tickets should be secured whenever practicable." Failure to purchase such transportation when available may result in suspensions, the Accounting Office warns.

ADMINISTRATIVE NOTES

Handling Money received from the sales of surplus crops, etc.
Public Funds. at field stations and elsewhere must be turned in as promptly as possible to avoid criticism. Mr. Ryerson has just sent a memorandum to heads of office, dated January 3, 1934, calling attention to a memorandum he has received from Doctor Stockberger in reference to this matter:

"A recent communication to the Department from the Comptroller General deals with a case where collections in the form of checks and money orders made at a field station were retained for undue periods running from several months to half a year before forwarding to Washington for deposit," writes Doctor Stockberger.

"The unwelcome feature of a disclosure of this character is that the facts were within the view of bureau officers and were passed without notice. Checks and money orders bear dates. A glance at these dates in the bureau unit receiving and handling the receipts for scheduling to the disbursing clerk is all that is needed for control purposes. A check of this kind should be established where not already in effect, and retentions beyond a minimum reasonable period should be at once brought to the attention of the responsible field officer with corrective instructions. In the cases, which should be rare, of cash collections the receiving officer should be required to submit a schedule dating receipts. Chiefs of bureaus are requested to cooperate in this regard."

To this, Mr. Knowles A. Ryerson, our new Chief of Bureau, adds: "This memorandum is self-explanatory. I shall appreciate it if you will see that this matter is called to the attention of all members of your Division who may have occasion to handle funds incident to their activities as members of Boards of Survey.

It is important, of course, that the regulations covering matters of this sort be fully and carefully complied with. Not only is the holding of these funds contrary to the regulations, but the individual is also personally responsible for these funds while in his custody, and he would be required to replace any funds which might be lost through bank failure or for other reasons. A careful compliance with regulations is of course essential, both from the standpoint of the welfare of the individual and the Bureau."

In this connection, it may be well to recall the general regulations in connection with the disposal of surplus crops at field stations, as distinct from the sale of condemned property, etc. and where funds are not to be turned into the Treasury in some cases.

(continued)

ADMINISTRATIVE NOTES

Sale of Surplus Products Of course, where the surplus crops at field stations result from our own work, on our own land, with expenses paid by us, the matter is relatively simple--they are sold under the usual Board of Survey arrangements and the money received is turned in to the United States Treasury.

In some cases, too, leases and agreements provide that crops or that part of them not needed by us for study or experimental purposes shall become the property of the cooperating agency. This is simple enough where the cooperating agency is in a position to dispose of this surplus itself. But such produce is frequently in small lots available at irregular intervals and it is sometimes necessary that its sale be handled by one of our workers at the station. While it would be preferable to have the produce turned over to the cooperating agency for sale, it is all right for our workers to handle the sales informally, collect the proceeds, issue receipts, etc. The receipts however--and this is very important--are issued merely as an accommodation to the cooperating agency and signed "For the (name of Cooperating Agency)" and never by the employee as a representative of the Division or Department. Any funds received are turned over to the authorized agent of the cooperating agency--in most cases the local bank is the most convenient agency. The money is to be deposited to the credit of the cooperating agency and never to the credit or in the name of the station or our representative at the station.

All disbursements from cooperative funds for cooperative work at the station should be made direct by the representative of the cooperative agency. Our employees must never draw against the funds as an agent of the cooperative agency, but may certify and submit vouchers to such representative for payment. The regular Bureau forms are used in reporting sales and disbursements.

Of course, very often the actual crops are taken over by the cooperating agency as their property and handled as such without in any way bringing us into the arrangement, so that it is not necessary for our workers to participate in the sales or make any expenditures from the crop fund.

Sometimes the cooperative agency sells the crops through its own representatives and merges the proceeds from the sales with the station fund to be used in payment of general operating expenses. It is recognized that in such cases it is frequently impracticable and sometimes impossible to obtain accurate figures on amounts derived from such sales. In reporting the disposal of surplus crops in cases of this kind, it should be shown clearly that the actual crops were turned over to the cooperating agency, and information supplied to us relative to the amount and estimated market value of the crop.

ADMINISTRATIVE NOTES

Figuring Per Diem The substitution of a per diem allowance for actual subsistence has simplified the handling of accounts, but the method of figuring the per diem still causes a little trouble. For accounting purposes, it should be said, the day begins at midnight and charges are prorated in units of one-quarter day:

Midnight to 6 a.m....	1/4-day	first quarter
6:01 a.m. to 12 noon	1/4-day	second "
12:01 p.m. to 6 p.m.	1/4-day	third "
6:01 p.m. to midnight	1/4-day	fourth "

Travel of less than six hours on the day of departure from or arrival at official headquarters on a trip of more than 24 hours is 1/4-day; more than 6 hours and less than 12, 1/2-day; more than 12 but less than 18, is 3/4-day; and anything more than 18 hours is counted as one day. When a trip is 24 hours or less, the actual number of hours away from headquarters is counted and the proportionate part of a day charged: From 2 p.m. July 2, to 7 a.m. July 3, for example, would be 17 hours, or 3/4-day (more than 12 hours but less than 18). We will give below an illustration of the method of claiming reimbursement for subsistence on a per diem basis based on trip in Government-owned truck with \$3.00 per diem allowance:

		: Sub-	:Subsis-	:Other
		: vouch-	: tence	:Expenses
		: ers	:	:
July 1	Left headquarters at 8 a.m. in Government-owned truck			
	8 gallons of gas at 15¢ gal.	1		\$1.20
	3 quarts of oil at 25¢ qt.			.75
	Arrived at Jonesville, Mo. 5 p.m.			
July 5	10 gallons of gas at 15¢	2		1.50
	Tire repair			.50
	3 cans nicotine sulphate at 30¢ (for experimental purposes)			.90
July 7	Returned to headquarters at 5 p.m.			
	Per diem, 6-1/2 days at \$3.00			19.50

In this account the employee left his headquarters at 8 a.m. on July 1. From 8 a.m. to midnight is 16 hours, or 3/4-day (More than 12, less than 18) for July 1. July 2, 3, 4, 5 and 6 are full days, of course. July 7 midnight (start of first quarter) to 5 p.m. (return to headquarters) is 17 hours, 3/4 day (more than 12, less than 18 hours)--total 6-1/2 days.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetables Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., February 1, 1934

No. 3

Mosaic-tolerant When I complained to one of our investigators that
Stringless bean field reports were rather scarce at this season of
the year, he pretended to find difficulty in understanding the reason. "Of course," he explained solemnly, "the securing of interesting field notes is always a difficult job--and sometimes a dangerous job. I do not see, however, just why it should be any more difficult now than at other seasons of the year. It is true that every flower has a pistil, but most of the plants haven't started shooting yet!"

And so goes an editor's daily life. But the scarcity of reports from our field workers does not mean that our work is not receiving attention and appreciation. You can trust those keen-eyed boys over at the Press Service to spot the interesting and important developments in all lines of departmental endeavor. So it is not surprising to find them on January 21, giving to the papers a notice about the new "snap" bean we have developed which will produce a good crop in spite of the mosaic disease.

Several years ago, the notice explains, the Department set out to breed a bean which would not be injured seriously by the mosaic disease. The early phases of the work were undertaken in cooperation with the workers of the Michigan and Wisconsin agricultural experiment stations. This campaign has already produced several very promising varieties and one of them has demonstrated its value in test plantings in Colorado. It is not immune to the mosaic disease, but it is not affected seriously by it and will grow and produce satisfactory crops even if infected.

It is easy to picture the welcome which will be given this announcement by bean growers, who have suffered terribly as a result of the mosaic disease which, of course, limits both the quality and quantity of the crop. It is decidedly pleasing, too, to have the discovery announced by some one outside of our Division. Some of the dividends our research activities pay are so amazing that one almost hesitates to discuss the work for fear of being charged with blood relationship to the late Baron Munchausen.

Rather, sometimes when I place on record one of our achievements, I wonder if the casual reader will not put me in the class of the Iowa jury which was trying a young and very pretty girl for shooting her husband. There was no doubt about her guilt, but the jury simply did not have the heart to convict such a pretty girl. But--most of the jurymen were married, and they knew what to expect on their arrival home after a vote for her acquittal. So the discussion went on until suddenly one of the men exclaimed: "I have it! I've just remembered that her husband was an Elk."

And so the girl was merely fined \$20 for shooting an Elk out of season.

No, we do not need to stretch things. The truth is ample--and then some, to justify our work. Considering the damage which has been caused by mosaic disease in bean plantings, it is probably not stretching the truth to say that this new bean, and those to follow it as a result of the same breeding campaign, will return in dividends more than the total cost of all of our truck crop disease investigations.

The new bean is a hybrid between the Stringless Green Refugee and Wells Red Kidney, and resembles the Refugee but is slightly earlier. It has pods only slightly smaller than Stringless Green Refugee, and so far the tests indicate that it will yield well.

Unfortunately, only a small quantity of seed is available this year, and we have planned to put this into the hands of experienced growers of bean seed for testing in all the principal areas where snap beans are grown for market and canning.

If this new bean proves as desirable generally as it has indicated in the preliminary trials that it may be, we can be sure that seedsmen will multiply their stocks as rapidly as they can, so that bean growers generally may substitute the new variety for the mosaic susceptible sorts now grown.

In the meantime, of course, we are going ahead with the campaign and putting the brother and sister hybrids of the new bean through their paces under actual field conditions to determine as promptly as possible their commercial possibilities.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

Writing of an examination made in December of several Washington Navel orange and Marsh grapefruit trees located on the Sunny Mountain ranch near Highgrove Calif. and selected November 11, 1932, for the purpose of observations as to the effects of partial defoliation from a typical "norther" occurring October 24, 1932, he says:

"On the selected trees, most of the leaves on the north sides had been blown off, 90 per cent or more, by the violent wind, but no burning of the foliage was apparent. On these trees most of the leaves on the south sides remained but some of them had been somewhat broken or otherwise damaged during the storm.

"The defoliated areas on these trees on the north sides are now clearly defined by foliage and fruit characteristics, more than a year after the storm. The leaves in these areas are apparently fewer in number and smaller in size than in the areas where much less defoliation occurred. The fruits are also fewer in number and of smaller size than in the more normal areas.

"In this orchard and in others located in the path of the norther, the sections where most damage occurred, the trees have fewer and smaller leaves, fewer and smaller fruits, than where the trees were more protected from the wind and where there was less defoliation effects during the windstorm.

"These observations rather strongly suggest the importance of wind-break protection in those citrus orchard locations where northers are likely to occur, as is the case in this and nearby districts, including those in much of San Bernardino, Riverside and Orange counties. It seems apparent that the abnormally large proportion of small sizes of Valencia and Navel oranges and grapefruit in the crops of those districts some seasons, such as the present one, may be due in part at least to partial tree defoliation during the violent winds that sweep over these areas occasionally, in fact during nearly every season for the past few years."

Come, Seven! Under the title "Seven New Strawberries Introduced by U.S.," the U. S. meaning us, of course, Dr. George M. Darrow tells the readers of the American Fruit Grower (January and February issues, 1934) something of the strawberry breeding work we have had in progress for the past thirteen years or so. To prove that we have already produced the lucky "seven", he lists 'em: Blakemore, Bellman, Southland, Redheart, Dorsett, Fairfax and Narcissa. These seven, to date, are the cream of the crop--and you know what a combination strawberries and cream make!

FRUIT AND NUT PRODUCTION

J. R. Furr, Pomona, Calif.

"During the period from December 31 to January 2, the heaviest rain storm in many years occurred in the Pomona valley. Near San Dimas where our lemon plots are located the total precipitation was over 15 inches--more than last year's seasonal total. Erosion was heavy in many groves, but our plots were protected by cover crop.

"Until recently circumference measurements of fruits were converted to volume on the assumption that fruits were spheres. Mr. Taylor and I started work last summer to determine the actual relation between the circumference of lemons and the volume. This work was completed this week, though a part of the range had been worked out for use in the work on cross transfer of water in mature lemon trees. The circumference of fruits ranged from 5 to 30 cm. and was determined as usual with a steel tape, the volume by determining the buoyant effect when the rigidly supported fruit was immersed in a vessel of water resting on one pan of a large torsion balance. When the mean curve of these data was plotted it was found that the deviations from the sphere curve was quite regular though the ratio lemon volume-sphere volume, changes from point to point along the curves.

"I went to the American Fruit Growers' ranch January 2 to collect records which they are taking on size of fruits at the upper and lower ends of the irrigation runs. In some of the blocks on this ranch very heavy applications of water have been made. Because the soil takes the water so readily at the upper end of the run it is necessary to keep the water running 48 hours to get it through to the lower end. This results in the application at the upper end of about three times as much water as the trees can transpire in a season. The manager of the ranch there, Mr. Barnes, and we are interested in finding out if there is any difference in the size of fruit. Random samples of fruit across the upper and lower ends of the irrigation runs on several large blocks of trees have been measured with a steel tape by the A. F. G. We are compiling these data. That which has been completed indicates that there is little or no difference in fruit size. The lower end has received sufficient water and apparently leaching has not reduced fruit size at the upper end. Incidentally, this shows that 'over irrigation' is not injurious if the soil is well drained.

W. W. Aldrich, Medford, Ore.

"I have heard a great deal recently about the so-called 'dry rot' of Anjous this year," he writes December 18. "Apparently more of this trouble occurred this year than last and may have been due to the longer periods of hot weather. During the week I talked with Mr. Leo Antles of Wenatchee and he told me that this year at Chelan, Wash. on trees on Jap roots this trouble was extremely serious. Since the term 'dry rot' is somewhat of a misnomer, I shall henceforth refer to it as 'drouth spot.'. I should prefer the term 'cork' as being more descriptive, but Professor Reimer feels 'drouth spot' will be easier to standardize."

FRUIT DISEASES

J. R. Cole, Shreveport, La.

"On Thursday, I accompanied Alben, Bureau of Chemistry and Soils, to the Melrose Plantation about 100 miles south of Shreveport," he writes on January 13th.

"This plantation, consisting of 3,000 acres, has over 7,000 pecan trees ranging in age from two to three years, to perhaps that many hundreds of years. Their chief difficulty is rosette on the Success and Schley varieties and scab on the Delmas variety. One peculiar incident to Alben and me was the apparent absence of rosette on the Stuart Variety. The Stuart trees were growing intermingled with the Schley and Success. As a rule the Stuart is the most susceptible variety to rosette.

It has rained so much in that locality recently that we had to ride over the orchard on horses."

Paul W. Miller, Corvallis, Ore.

"Mild temperatures continue to prevail in the Pacific Northwest," says the report for the week ending January 6th. "Fruit growers are becoming alarmed, as the stage seems to be all set for considerable winter injury if abnormally low temperatures should suddenly occur.

"The week was spent largely in attending a series of nut growers meetings which were held at centrally located points in the nut growing sections of Oregon. Informal talks on walnut and filbert blight and their control were given at each meeting. Approximately 450 people attended the seven meetings scheduled and considerable interest in the matters discussed was shown. Contacts were made with a number of influential nut growers and several prospective cooperators for the coming season were lined up."

He had written December 23d: "Torrential rains have occurred in the Pacific Northwest during the current week. At Corvallis, a total of approximately 14 inches of rain has fallen since December 1. This rainfall is far above normal for December, which is about 6.7 inches.

"Aberdeen, Washington, has had more than twice that amount so far, receiving about 27 inches in the first 22 days of December. This is the greatest December precipitation for this locality since 1897. Relatively warm temperatures, averaging about 55 degrees F., have prevailed along with this heavy precipitation.

"The rains over practically the whole Pacific Northwest have caused the rivers to rise and serious flood conditions to prevail in many localities, particularly along the lower Columbia."

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"We have enjoyed a remarkable autumn, and the winter so far has been even better," he writes on January 6. "With the exception of one or two light freezes during the first half of November, the weather has been warm with an abundance of sunshine and very little rain.

"During the last quarter of 1933, only 1.73 inches of rain fell. A total of 38.54 inches of rain fell during the year, which was perhaps the lowest precipitation on record for Albany. The rainfall deficiency during the main growing months of April to October, inclusive, amounted to 6.47 inches and the departure from the normal for the year was -11.86."

John C. Dunegan, Fayetteville, Ark.

Writing on January 13th, he says: "The Ozark Fruit Growers' Association held its annual winter meeting at Monette, Missouri, on January 11, and according to reports presented at the meeting the prospects are very good for a large crop of strawberries this coming season.

"The Missouri and Arkansas districts have a combined total of about 25,000 acres and due to the extra long growing period and abundance of rain through the summer and fall, the fields are reported to have about four times as many plants in them as they had at this time last year.

"A cheerful outlook also was seen for the grape growing industry by the grape committee. This group urged that growers pay strict attention to cultivation and care of their vineyards."

M. A. Smith, Ozark Fruit Disease Laboratory.

"The Public Works Administration has appropriated \$39,000 to sixteen of the principal fruit growing counties of Missouri to be used in a program of orchard sanitation," he reports on January 6th.

"According to the terms under which the money was appropriated, abandoned orchards are to be cut and burned, dead trees in bearing orchards are to be destroyed, cedar trees in the vicinity of apple orchards are to be removed, and prunings are to be removed and destroyed. It is estimated that 420 men will be employed and that the work will continue for a period of six weeks.

On December 23 he wrote: "From January 1 to December 1, 1933, there was 1,000 degrees accumulated surplus from the normal temperature at Springfield, Mo. Up to December 24, this has been the second warmest year of record during the past 46 years. Up to December 24, this was also the second warmest December for the same period."

TRUCK CROP DISEASES

W. D. Moore, Charleston, S. C.

"General weather conditions remain unchanged in this section," he writes in a report of the January 1-13 period. "We have had less than one inch of rain since December 1st, although this lack of precipitation has apparently not damaged truck crops materially.

"Some growers have experienced difficulty in getting good stands of cabbage and lettuce but sufficient re-planting had been done to insure a normal crop over the planted acreage. All small plants are suffering to a marked degree at this time from an unusually heavy infestation of Aphids, resulting in some cases of a complete loss of stand. The temperatures have been somewhat low for spraying and dusting with nicotine sulphate, consequently this insect has been free to multiply and spread to all tender foliage.

"Spinach mildew, Peronospora effusa, has begun to develop quite rapidly in some fields at this time and will probably cause considerable damage on the younger plants. This is especially true in this area since no one is equipped to spray for the control of this particular disease.

"As a result of the severe losses last season from Rhizoctonia on potatoes, together with our warning about the necessity of seed treatment for its control, there is probably the largest potato seed treatment movement under way in this section at this time in the history of the trucking industry. We are being called upon daily for information concerning this work.

"There is a considerable acreage of green peas planted in this section this year and much interest is being shown in the control of downy-mildew, Peronospora viciae, on this crop. Since there is little or no information available on this particular work, a careful study of field conditions will be made and such practical suggestions given as the problem warrants. From the available information at hand, it seems that this problem may require some definite experimental work in the future."

The Dark Ages in Plant Pathology. The Journal of the Washington Academy of Sciences for September 15, 1933, contains an extremely interesting paper by Neil E. Stevens under the title: "The Dark Ages in Plant Pathology in America: 1830-1870." The discussion is, of course, largely autobiographical, the incidents of those dark ages apparently having made a strong impression upon Doctor Stevens' youthful mind!

POTATO INVESTIGATIONS

It is reliably reported that an inmate of an insane asylum who had escaped from the institution, returned after a week and pleaded that he be taken back. When the Superintendent asked him why he wanted to take his place in the institution again, the man replied: "Well, I have been out now for more than a week, going here and there, and I find lots of people without bread and hungry and they tell me it is because there is an overproduction of wheat and foodstuffs. And I find lots of others ragged and partly clothed, and they say it is because there is an overproduction of cotton and such things. So I want to come back here where I am safe from such crazy people."

Well, we are doing our best to prove that we are not crazy, by seeking to make available new and improved varieties of one of the greatest of food crops--the potato. We look forward hopefully to producing varieties which will ensure a regular crop of high quality, so that the potato grower may fit his production to the demand and not be compelled to plant twice as much as he needs to provide protection against loss from diseases.

It is to introduce new "blood lines" in the potato, a recent Press Release points out, that we have searched the world for strains of cultivated potatoes and closely related wild plants. One expedition into the original home of the potato in Chile, Peru and Bolivia brought us more than 400 lots of tubers and seed. It should be remembered, of course, that these introductions need not be commercially valuable in themselves. If they possess one or two desirable qualities, the breeders get to work to transfer those qualities to our commercial potatoes.

"Such a program," says Mr. Ryerson, "involves working for the future as well as the present. The plant breeders will destroy thousands of seedlings every season because they combine too many undesirable characteristics. Diseases will destroy other thousands of seedling plants. The breeders intentionally subject the most promising seedlings to severe epidemics of disease, both in the field and in the greenhouses. These diseases eliminate many strains that would otherwise reveal weaknesses later on. It will take years to develop the broad program, but in the meantime there is every reason to anticipate that we shall develop from time to time varieties of potatoes, the commercial value of which will repay many times the cost of the research. These midway steps in the march toward greatly improved varieties are good evidence of the value of the work.

"The value to growers of the Katahdin potato alone would repay many times the cost of the potato investigations to date," he adds, "but it seems highly probable that in the long run the value of the Katahdin stock as a parent of further improved varieties will be even greater than its present value."

The Italics are ours, but the dividends go to our stockholders!

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. R. Barger, Indio, Calif.

Writing on January 11, he reports: "A killing frost December 18 that reached a minimum of 22 for an hour before sunrise, killed the green beans and the first planting of peas that had just started to bear. Bean harvest had been going on for a month and before the freeze the beans had been bringing a good price--8 to 9 cents a pound. The later plantings of peas where the plants were 6 to 8 inches high came through without damage. Grapefruit trees usually have a flush growth of leaves in the fall which freeze during the winter, but tangerine trees do not have this fall flush and very seldom show any frozen leaves. The low temperature was of too short duration to hurt citrus fruit and dates. The grapefruit is well colored on the tree and of high quality, with sizes running mostly to 80's and 100's with few 64's. We hear rumors of strikes of citrus pickers in the orange belt and lettuce pickers in Imperial Valley, but so far we have had no labor trouble. The grapefruit growers of the valley have organized, irrespective of affiliation with marketing agencies, into a "Center" to control time of picking, with the purpose of maintaining high quality and to prosecute people who stamp out-of-the-valley fruit as Coachella. Coachella grapefruit usually commands a premium on the market.

"The date crop will probably be around 4-1/2 million pounds, over 90 percent of the Deglet Moor variety. The crop is not much larger than last year, due probably to the fact that the fruit stalks produced by each palm were fewer in number than last year, which seems to be the form of alternate bearing or "laying off" that is beginning to be recognized by date growers. No rain or any other cause has reduced the crop during the harvest. There is probably not over 30,000 pounds of fruit still on the palms of the late ripening section west of Indio. The crop has been moved out of the valley soon after picking; about half of it going East. The fruit is generally put into cold storage at the market by the grower or agent and reports are that sales from storage have been satisfactory. About 15 percent of the crop must be culled because of excessive dryness of the fruit, and the prevention of this drying on the palm, and the salvaging of the dry fruit is one of the big problems to be taken up. The Date Exchange research committee is formulating a research program needed by the industry. Work along the lines of finding the characteristics of prime dates, conditioning dates for sugar and moisture content, improvement of packages, and by-products seem to be considered the most important. By improving machinery and working space at the Association Packing House where 60,000 pounds of dates a day are often received, the cost of handling and packing was reduced somewhat, but since wages were increased 15 percent this season, the saving was passed on to the employees to a large extent...."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

"The weather became 'normal' again for the Puget Sound area in that rainy periods with moderate temperatures punctuated some very fine sunny days," he writes January 20th. "Temperatures dropped to about 32 degrees F. a few times, but no serious damage has yet been done to vegetation. The improvement in the fortunes of the apple producing districts is reflected in the business of the wharf terminal, in which the Laboratory is located. One thousand cars of apples are loading from this dock alone during the month of January; at this writing, one Royal Mail SS carrying 245 cars of apples has just left, and two others, the Narenta and the Nagara, are loading now. The Fruit Express SS Oregon Express has been crowded away from the dock and is taking on a full load of apples at a neighboring Port dock."

Edwin Smith, Wenatchee, Wash.

"There were more discussions and this included Dr. Gerhardt and Mr. Ezell's paper on 'Handling Jonathan Apples for Storage,' as well as winter transportation problems and spray residue removal results, than there were at the Washington meetings," he writes on January 15, speaking of the Idaho State Horticultural Association meetings. "Southern Idaho has not had the assistance with fruit washing problems that other Northwestern apple districts have had. They got through the season fairly satisfactorily with old equipment or made-over washing machines and at present are not seriously worried about the problem. The use of low temperatures and, to a great extent hydrochloric acid, probably accounts for their not having so much washing injury as growers in Washington have had. That they reached tolerances with these washing methods may be accounted for by the general report of entomologists and field men that Southern Idaho growers ordinarily apply but from 5 to 10 gallons of spray per tree at one application as against from 25 to 40 gallons per tree per application with high pressure stationary spray plants in the Wenatchee and Yakima valleys. The Bureau of Plant Industry (Idaho State Dept. of Agriculture) under Mr. W. H. Wicks, shows that Idaho methods of spraying have not been holding the codling moth in check. It is estimated that the number of cars of apples lost in Idaho on account of worms amounted to 748 in 1931; 854 in 1932, and 1729 in 1933, representing 12.4, 16.38 and 23.1 percent, of the annual crops produced...."

"Under a packing code growers were charged 27c per bushel basket for washing and packing during 1933, with a package cost of about 15c. When packed with paper liners, the charge was 30c; with paper fringe, 33c, and with a dab of colored shredded oiled paper in the top layer (for appearance only), 35c. Owing to the exceptionally high temperatures during the autumn and thus far during the winter, Idaho's common storages have not given good protection. Delicious and Rome Beauty on exhibit were in a very advanced stage of maturity. This condition will force the early marketing of the balance of apples in common storage. The weather in Idaho has been relatively more unfavorable for fruit buds than in Washington, because prior to January fruit buds had started to swell whereas in Washington the overflow of clouds from the Coast and the fall of Christmas snow gave slightly more favorable conditions."

ADMINISTRATIVE NOTES

Annual Reports of Progress. The call has been sent to project leaders for the annual reports of progress under our various projects. These reports, which cover the fiscal year ending June 30, 1934, are to be in Doctor Auchter's hands by March 15, 1934. Since project leaders must depend upon their workers for much of the material in these reports, the NEWS LETTER is summarizing below Doctor Auchter's memorandum to section leaders, indicating just what is desired. Incidentally, the progress reports submitted last year were, on the whole, the most informing of any that have ever been turned in--the problem now is to make this year's reports even better!

Period to be covered. These reports are intended to be for the fiscal year ending June 30, 1934. This of course restricts the discussion of actual accomplishments to the portion of the year preceding the date of preparation of the various reports. To a considerable extent accomplishments are coordinated with the crop year rather than the fiscal year, so that in many cases any portions of the reports that concern work during the last few months of the fiscal year will obviously deal with the initiation of activities, the results of which will be reported a year hence rather than for the fiscal year 1934. However, as far as practicable, anticipatory statements regarding the work to the end of the year should be made.

What the reports should NOT be. It is neither necessary nor desirable to support statements with a mass of tabular data. If a statement can be made clearer by a brief table, well and good, but a great volume of figures amounting to a transcript of field records has no place in a progress report. (If a Section Leader wants his field men to file with him full field records giving details of the work, that is a matter entirely apart from the annual progress report and must not be confused with it).

Again, the report should not be a long essay type of presentation. Such a presentation buries the gist of the matter too deep in a multiplicity of words to be very serviceable. The reports should not rehearse accomplishments prior to the year beginning July 1, 1933, beyond what is necessary to give a proper background for the accomplishments of the current year. That, of course, will vary in the different projects.

What the reports should be. The reports should be fully developed informing statements in regard to the work done during the year, and the results accomplished. The statements should tell briefly: (1) - for what your money was spent, that is, the work done during the year; (2) - what you have accomplished for the good of the taxpayer, and what has been contributed to science. It is of course fully understood that accomplishments can not be dated, as a rule, by the day or month, and often not by the year. However, throughout the year each one has been working for certain objectives; those objectives are more nearly accomplished now, if not completed, than they were a year ago. Tell what you have done. Tell also where your various activities have been located.

Put yourself in the position of the Chief of Bureau before the Director of the Budget or a Committee of Congress fighting for your work. Supply all the facts that you can, both with regard to what you have been accomplishing, and what your work means to the industry which you are serving. But boil your facts down into the form of concrete and specific cases and accomplishments. This does not mean, however, that statements of fact and discussions essential to an adequate elucidation of your activities should be sacrificed to brevity.

Besides the type of information requested above please mention specifically particular problems that have been completed during the year so that no further work on them is required. If the research work has been completed, but the results are yet to be prepared for publication, make that status clear. This information is needed to refute the criticism of this Division, that it never finishes any of its projects. That may be largely true, due to the manner in which our projects are organized, but we do complete particular problems under the various projects. Make mention of any you have completed during the year.

As most of you know, the annual report of the Chief of Bureau is made up of brief paragraphs concerning the more conspicuous accomplishments of the year in the work of the Bureau. These paragraphs are prepared in the various Divisions and submitted for consideration specifically with the Chief's Annual Report to the Secretary in view. In addition to his regular progress report, will each Section Leader please prepare such paragraphs relating to his own work in the way he would like to have them appear in the Chief of Bureau's report, should they be selected for that purpose; or at least indicate what items in his regular progress report he considers especially worthy of recognition in the Chief's report, with a view to the paragraphs being shaped up in this office.

Please submit a complete list of publications for the year including:

- (a) New bulletins or other publications issued, including articles published outside the Department;
- (b) Manuscripts submitted for publication but not yet in print;
- (c) Manuscripts in the course of preparation on subjects for which the research work has been completed;
- (d) Bulletins which have been extensively revised for reissuing. (Those in which only a few incidental changes were made in order to bring figures, etc. up-to-date need not be included).

ADMINISTRATIVE NOTES

Research records and plant patents. Bureau of Plant Industry Memorandum No. 752, dated January 18, 1934, issues a warning in connection with the need for accurate records in passing on applications for plant patents, etc. It says:

"Observations of some of the recent patent controversies and appeals that have been brought to the attention of the Bureau, have indicated that it is highly important that accurately dated records be kept of our research work, especially where patents or questions of priority are likely to be involved. Such data is likely to become important at any time, and we wish to be certain that all of the research work of the Bureau is well protected from every angle, in case of contest.

"Please take such steps as may be necessary to complete the records of all research projects in your Division," Mr. Ryerson adds, "so that at any time the records, if called for, will tell the whole story with no loopholes."

This matter is one which should be given careful consideration by section leaders and investigators who may have work apt to lead to patent applications, or in which questions of priority are important.

The fruit outlook. Doctor Auchter contributes to a symposium in the American Fruit Grower for January on "What the New Year Holds in Store for the American Fruit Growers." He believes that by making full use of the findings of the scientific investigators, the American fruit grower will be able to increase production per tree and per acre of high quality fruit on desirable orchard sites, thus reducing cost of production. And it is his opinion that with changes in and better marketing facilities as a result of the Agricultural Adjustment Act, a greater net and total profit will be received.

An A.A.A. booklet. Incidentally, a booklet for free distribution, on the Economic Bases for the Agricultural Adjustment Act, has been prepared by Mordecai Ezekiel, economic adviser to Secretary Wallace, and Louis H. Bean, economic adviser in the Agricultural Adjustment Administration.

Standardized Plant Names. Another interesting announcement regarding new publications tells us that at the January 15 meeting of the American Joint Committee on Horticultural Nomenclature, in New York City, it was decided to issue a new and revised edition of "Standardized Plant Names," of which some 5,000 copies have been distributed.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., February 15, 1934

No. 4

They're telling us! Says the California Citrograph for February: "How simple it is if you know how! Northwestern pear growers have always had trouble in shipping fruit during the winter. Freezing ruins pears and artificial heat has a bad effect. Scientists under Doctor Taylor in the United States Bureau of Plant Industry found by simply scattering sawdust, sprinkling it with water and letting it freeze, that the fruit carried well. And, in addition, it means a potential saving of from \$10 to \$12 a car in transportation costs.

"This is just one illustration of the hundreds of useful things which this Department has done and is doing. It has done equally fine things for the citrus industry and there is going to be no let-up in the constructive program under the guidance of Knowles Ryerson, who succeeded Doctor Taylor the first of the year."

Thanks, Mr. California Citrograph! This sawdust sprinkling, of course, is merely one of the lighter diversions of the workers in our fruit handling, transportation and storage investigations section who found that the latent heat of fusion of water could be employed to protect the pears from freezing in transit. Sawdust saturated with water is packed under the lower portion of the load, and the heat liberated when this water is frozen in transit protects the fruit from freezing for two days or longer than the use of dry straw and building paper, customarily used by pear shippers. The tests were conducted during very severe cold weather--as low as - 38 degrees F. The work is discussed in the annual report of the Chief of Bureau for 1933.

TRUCK CROP DISEASES

Shift in Cabbage seed Production. Dr. J. C. Walker, whose yellows-resistant cabbage varieties are still very much in the spotlight, has given the Department's Press Service an interesting item on the shift in cabbage seed production. He points out that most of the cabbage seed produced in this country comes from the Puget Sound Region in Western Washington. "In recent years," he says, "commercial production of cabbage seed has shifted more and more to the Skagit Valley, a relatively small area only a few miles south of the Canadian line where growers made a business of this specialty.

Discussing an interesting phase of his work, the item goes on to say that lack of rainfall in the growing season is ordinarily considered a serious handicap in farming, but in the Skagit Valley it seems to be the secret of success, the factor that gives these growers an advantage over competitors. Two of the most serious diseases affecting cabbage are black leg and black rot, and seed from the Skagit Valley is usually free from both. Doctor Walker has discovered that the organisms that cause these diseases are usually carried from infected plants to healthy plants by the splashing of rain, and rarely if ever through the soil or by the wind. The Skagit Valley has an adequate supply of moisture but it seldom rains in the months from May to September, when cabbage is maturing. This accounts for the fact that seed produced there is free from these two serious cabbage diseases.

W. D. Moore, Charleston, S.C.

"In cooperation with Mr. Jenkins, associate horticulturist of this station, we are working on some crosses of the Bountiful and Tennessee Green Pod beans," he writes January 27th.

"The F_1 generation of this cross seems to be much earlier than either of the parent strains, a factor of much importance to the growers of this section. From my previous work, the Tennessee Green Pod is the earliest and heaviest yielder that has been tried in this area. Our efforts now are to get a smooth pod and further resistance to such diseases as root rot and mosaic."

He adds: "We continue to get numerous calls from farmers for help on all phases of truck crop work, particularly plant diseases and deficiency troubles. For the first time in the history of our work in this section, the largest cooperative association in this area has come out solidly for us. A recent letter was sent out to all members urging them to follow our suggestions in the control of plant diseases...."

FRUIT DISEASES

John E. Dunegan, Fayetteville, Ark.

"The mild weather of the past few weeks came to a sudden end on January 29, when a high pressure area swept down the Mississippi Valley from Canada," he writes on February 3.

"The thermometer registered a drop of 40 degrees between the high reading of January 28 and of January 29. The cold wave continued through January 30, but the temperature has been gradually rising and February 2 and 3 were balmy spring-like days with the thermometer reading above 60 degrees F. at noon."

He had written just before that, under date of January 20: "Mild weather has prevailed the entire week. Strawberries are reported to be in bloom in few fields in Washington County. Here at Fayetteville the effect of the continued mild weather is beginning to have an influence on a number of the ornamental plants. Forsythia and Japanese quince are in bloom, the buds of several maple and poplar trees are decidedly swollen. Last year the weather in January was very mild and the vegetation began to develop only to be killed by a sudden drop in temperature early in February."

Paul W. Miller, Corvallis, Ore.

"Judging by the results of inoculations with the bacterial blight pathogene on young filbert trees, it would seem that filbert tissues are most susceptible to infection from the bacterial blight during the dormant period and during the early part of the growing season," he writes on January 13.

"It was also found that the tissues of young twigs and suckers one year of age are apparently more susceptible to bacterial blight infection than branches two to four years old as is indicated by the large number of negative results obtained from inoculations on these older stems. It was further noted that trees in a vigorous state or condition seemed to be more resistant to infection from bacterial blight than trees which are not so vigorous."

Writing on January 27 he added: "Mild weather continues to prevail. Many early shrubs are leafing out. The bulk of the pistillate flowers on the Barcelona variety of filbert are now in full bloom."

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"The protracted spell of mild weather came to an end last Sunday," he writes in his report for the January 8-31 period.

"A cold wave riding a forty-mile-per-hour gale caused a drop of 48 degrees in temperature in less than 15 hours. A minimum temperature of 2 degrees above zero was recorded Sunday night, and the same temperature again Monday night.

"Peach fruit buds from the Purdue-Vincennes orchard examined Monday afternoon showed a mortality of 23.6 percent. Elberta and Hiley buds from the Dyer orchard were examined Tuesday afternoon. The Elberta buds showed a mortality of 42 percent and the Hiley 54 percent. Buds killed by the freeze the night of December 26, 1933, amounting to 12 percent, were not included in the count."

Controlling
Codling Moth.

"Studies of Fluorine Compounds for Controlling the Codling Moth," is the title of Department of Agriculture Technical Bulletin No. 373, by E. J. Newcomer of the Bureau of Entomology and R. H. Carter of the Bureau of Chemistry and Soils. The paper reports the results of insecticidal tests made at Yakima, Wash. in connection with the search for insecticidal material which could be substituted for lead arsenic for the control of codling moth.

A. L. Ryall of our section of fruit and vegetable handling, transportation and storage investigations assisted with some of the tests in connection with the removal of fluorine spray residue.

Obscure Scale
On the Pecan.

Howard Baker, assistant entomologist of the Division of Fruit and Shade Tree Insects, Bureau of Entomology, has prepared a paper on the obscure scale on the pecan and its control, which has been issued as U. S. Department of Agriculture Circular No. 295.

"Strawberry Dwarf," issued as U. S. Department of Agriculture Circular No. 297, by J. R. Christie and Neil E. Stevens, has been revised and the new issue is now being distributed.

KEEPING 'EM IN HOT WATER!

There are said to be employers, though, of course, not in our Division, who believe that keeping workers in "hot water" tends to improve their efficiency. The editor has never believed this, but recent evidence has convinced him that the thing will work--if you are dealing with "cabbage heads."

Treating cabbage seed by the hot-water method so added to the efficiency of a four-acre tract of cabbages on an Indiana farm that it produced 75 tons of cabbage. A nearby field, planted with untreated seed, produced just 8 tons.

The method is really so simple and inexpensive that it should be used by all cabbage growers, the principal equipment needed being an accurate thermometer. The water should be kept at 122 degrees Fahrenheit for the 25 minutes of treatment. For treating even a few ounces of seed it is desirable to have a good-sized container such as a tub or wash boiler, this making it easier to control the temperature of a fairly large quantity of water. The seed are placed, loose, in a cheesecloth bag, and the bag dipped into the water, wetting all of the seed thoroughly. In 25 minutes this treatment will kill the germs of the disease and will not seriously injure the germination of good plump cabbage seed, though it may injure old seed that is shriveled. If it is necessary to use old seed, it may be safer to try out the hot water treatment on a sample of the seed and the make a germination test to compare the treated seed with a sample of the untreated seed. It is a simple matter to keep the temperature of the water at 122 by adding hotter water from time to time.

"In communities where cabbage is an important crop, it is most practical to establish a community treating service with one man in charge of all of the work," says the notice being distributed in connection with our endorsement of the hot-water method of preventing certain cabbage diseases. "In one county in New York last year, more than 3,000 pounds of seed were treated in this way.

"Seed may be treated immediately before planting, or the work may be done any time during the winter and the seed dried in shallow trays.

"A mercuric chloride treatment will control black rot alone," adds the notice, "but is not effective against the black leg disease.

"If the seed is too shriveled to endure the hot-water treatment, it will pay to soak it for 25 minutes in a solution of one ounce of mercuric chloride to 7-1/2 gallons of water, or one standard tablet to a pint. Rinse the seeds after the treatment and let them dry."

To the finished product resulting from planting such seed, add corned beef as desired.

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Measurement of total length of shoot growths in the irrigation-pruning-plots was completed," says the weekly report of January 22. "The results indicate rather definitely that heavy pruning resulted in longer total shoot growth, as well as much longer average length of shoots, than light pruning. Furthermore, this increased length of shoot growth from heavier pruning was more pronounced in the plots with high soil moisture than in the drier plots. I had expected the opposite.

"However, the results seem easily explained. Final calculations of leaf area in these plots show as great a leaf area in the heavily pruned as in the lightly pruned plots. In other words, the increased area of the leaves following pruning compensated for the reduction in growing points other than shoots.

"The results also show a larger ratio of shoot leaves to spur leaves in the heavily than in the lightly pruned trees. Since the shoot leaves average about 15 per cent larger than spur leaves, the heavily pruned trees had a larger leaf area per fruit than the lightly pruned trees, with the same number of leaves per fruit in each plot. This may be the principal explanation of the greater rate of shoot growth for the more heavily pruned plots."

C. E. Schuster, Corvallis, Ore.

Writing on January 27th he reports: "This week has seen the beginning of the cost survey work on filberts. The figures will show a very high yield with a very low cash cost per pound, if the records we have taken so far are indicative of the filbert industry as a whole.

"Also, so far as we have gone, every grower is planting or intends to plant more filberts this year. At one place where we collected data they insisted that except for the 6-acre filbert orchard on the ranch they would not have been able to keep the ranch....

"Again this year we find that certain filbert varieties have undoubtedly stepped out of their natural sequence of blooming and are not blooming in the order that they usually should. This seems to occur very nearly every year with one or more varieties, but seldom with the same variety two years hand running."

He had previously reported that the week of January 8-13 was spent in gathering pollen for work on filberts, and later that the first early pollination on filberts had been finished by January 20, or nearly so.

FRUIT AND NUT PRODUCTION

Atherton C. Gossard, Spring Hill, Ala.

He writes on January 13th that the first two weeks in 1934 were spent measuring, cracking and weighing meats from the nuts harvested from the pruning experiments at Seven Hills.

"The average yield per tree was slightly more from the unpruned than the pruned Stuart trees, and greater from the pruned than from the unpruned Success trees," he reports.

"The percent of the crop picked up from the ground before the trees were thrashed was greater from the pruned than from the unpruned Stuart trees, and greater from the unpruned than from the pruned Success trees.

"The average size of all the nuts harvested from the pruned trees of every variety was greater than that of the nuts from the unpruned trees.

"The average weight of the nuts and the average weight of the meats of the nuts harvested from the pruned trees were greater than those of the nuts and meats of the nuts harvested from the unpruned trees. The per cent of the nuts containing good meats was greater in the harvest from the pruned than from the unpruned trees of both varieties. The per cent of the nuts containing good meats was greater in the case of the nuts which fell to the ground and were picked up before the regular harvest than in the case of the nuts which were thrashed from the trees at the time of the regular harvest.

"We have not definite record to show why the early maturing nuts contained the higher percentage of good meats, but it is thought that a bad infestation of shuck worm and injuries from some causes which were particularly severe, due to lack of spraying by the owners, prevented proper maturing and shedding of nuts, thus causing the retention of a high percentage of light nuts on the trees until they were thrashed."

Sick Leave Employees who apply for sick leave on the grounds that an attack of rheumatism makes it impossible for them to walk, may expect to have their claims looked into--especially if it is known that they are bridge enthusiasts. It comes about as the result of a conversation reported from the home of one of our Takome Pack associates whose wife had drafted him to fill in at her bridge party. He explained that he would join them as soon as he was dressed, and when she insisted that he was already dressed satisfactorily he protested: "No," he said, "I've still got to put on my shinguards."

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

Writing on January 30, he says: "In contrast to the performance of the past two winters, peach and apricot roots have been making some extension during the entire present winter. This year's performance is probably due to the extremely mild weather that has prevailed...."

"I was told that in the Yuba City district considerable fruit tree planting has been going on and that the nurserymen are about sold out of prune, almond, and peach trees, and that the demand for trees of the different fruits is in the above order. More optimism regarding the fruit industry and the ability of orchardists to secure loans through Government agencies are said to be the reasons for increased plantings.

Personal and Confidential. For the benefit of our colleague, Wm. R. Barger, at Indio, Calif., who appears to labor under a slight misapprehension as to the source of the intense heat at Indio at times, we would like to say that Irving P. Krick, meteorologist for the Gruggenheim Laboratory of Aeronautics at the California Institute of Technology is reported as offering the explanation that Cajon Pass should have the credit to a large extent.

It is the only outlet for vagrant desert air currents along the entire San Bernardino range, he points out. The air, entering the chute on the barren side of the range at 4,000 feet is pretty cold. By the time it reaches the coastal end of the chute, at 1700-foot level, it has by the velocity of its descent and the struggle to win through the narrow canyon, generated its own warmth. If its journey is a rough one, then we have the "Santa Ana" or mild sirocco.

As we get it, the notion some people have that southern California's winter heating system is of the hot-water type, stamped "Japanese current," is all wrong. Mr. Krick's explanation makes it clear that we have here the hot air system. We trust this is all very clear to you, W. R.?

Bulletins Incidentally, one of our readers writes in for copies of the Bulletin of farm and home drying of fruits and vegetables, recently mentioned in the NEWS LETTER, and adds: "I want, too, Farmers Bulletin 1716 on "Mole Control." And if you have anything on warts, send that, too." Do you suppose he really is serious, and has his moles mixed?

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Bruising and Freezing of Apples. "Bruising and Freezing of Apples in Storage and Transit," has been issued as Technical Bulletin 370, in the Department's series. It was prepared by Dean H. Rose and J. M. Lutz of our fruit handling, transportation and storage investigations section.

The authors find that one type of transit injury to boxed apples shipped by rail can be prevented for the most part if shippers will use corrugated paper liners inside the boxes. This injury, the cause of substantial loss in the past, consists of firm, dark, flattened areas on the lower side of the bottom layer of apples in the boxes as they rest on their sides on the floor boards of a railroad car. There is usually a watersoaked or browned region beneath this flattened area which extends in the shape of a cone toward the core of the apple.

This injury resembles the condition sometimes seen at the bottom of the floor boxes in apples that have been frozen and is frequently thought to have been caused by freezing. Its occurrence where freezing could not possibly have occurred prompted the investigation covered by this bulletin. In experiments railway transit conditions, including the jolting, were reproduced in a laboratory where the temperature was controlled. The results of these tests showed that typical transit injury can be produced in apples at temperatures where no freezing occurs. Freezing may make the injury worse but is not the cause of it, the authors say.

The damage has been prevented almost entirely - both experimentally and under actual transit conditions - by placing corrugated paper liners between the fruit and the sides of the box. The use of resilient paper liners was the only method that gave uniformly satisfactory results although several other methods were tried.

In view of the rather heavy losses each year because of bruising injury to apples the bulletin is certain to prove of decided value.

Bids for Iron and Steel Products. In view of certain special requirements which must now be observed in the preparation of requests for bids for iron and steel products, where shipment by freight is involved, it is requested that instead of attempting to secure bids in the field, a full statement of your needs be supplied to Mr. L. O. Gillette of our Business Office, who will be in a position to make out the invitations for bids in the special form required by the Department, and thus facilitate the prompt placing of the order.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The winter transportation test trip party has been with us and watching weather maps," he writes for the week of January 16th to 27th. "Their string of nine cars is all lined up ready to take off on the advice of the Weather Bureau. However, formations of cold weather have been of the second order and thus far have promised to be of short duration....."

"The fruit growers in Washington are generally looking through rose-colored glasses again. Apple prices continue in their ascendance and for some of the scale-free Winesaps of restricted size for French orders, prices as high as \$2.00 F.A.S. Seattle, have been paid. This should mean from \$1.70 to \$1.75 to the grower. However, for all sizes, \$1.44 for Extra Fancy (after all cold storage and selling charges have been paid) has been the highest Winesap price which we have heard about. The movement has been quite satisfactory and a general good feeling prevails."

In a report of February 3, he said: "In the marketing field the principal excitement has been surrounding the French demand. They were in such a rush to fill their quota with scale-free apples that they paid forty cents a box premium on a couple of hundred carloads, much of which premium came to the Wenatchee district. This has not had a healthy influence upon the domestic market because the French prices have been so much higher that the asking prices in the domestic markets seem to stop buying. Domestic trading has been slow."

Automobile Because the law does not permit reimbursement for automob-
Mileage. ile mileage within the limits of a fieldman's headquarters,
all letters of authorization for reimbursement for auto-
mobile mileage contain a provision that "mileage is to be computed on
the distance from the limits of the headquarters, whether field station
or city, to points visited and return to such limits."

The General Accounting Office requires that all claims for reimbursement for automobile mileage contain an affirmative showing that no travel within the limits of the headquarters is included in the claim. In a number of instances recently this showing has not been made and therefore the Bureau auditors have been compelled to make a number of suspensions pending receipt of such statement.

It is suggested that care be taken to figure mileage claims from the limits of the headquarters and that a statement similar to the following be made on the automobile mileage form which accompanys the account:
"None of the above travel was within the limits of my headquarters."

ADMINISTRATIVE NOTES

Telegrams--and Their Substitutes. Work in connection with emergency activities has made necessary a bit more frequent use of the telegraph and its substitutes than has been our custom, and we have been forced by the condition of our budget to seek the most economical means of delivering messages promptly. Of these, of course, the radio tops the list, for the Army and Navy will send such messages for us without charge where satisfactory connections can be made.

Air mail, too, may sometimes take the place of a telegram, especially of the night message. Inquiry of the Department postoffice reveals that it is possible to airmail letters on the 3:20 pm. plane at Washington, D. C. and get them into San Francisco at 11:55 the next morning. To be certain that letters go out on the 3:20 plane, it is advisable to get them over to the Department postoffice not later than 2 pm. And so on.

As to the telegram itself: The Government rate is 40 per cent of the commercial rate, with certain minimum rates established for various classes of service: Day messages, 25c; day letters, 45c; night letters 30c; night messages, 20c. Outside of these minimum rates, you can figure the cost of a telegram by finding out the commercial rate and taking 40 per cent of it.

The 25c minimum, of course, does not apply for all places. It is merely the lowest rate between the closest points. The basic commercial rate for 10 words for Washington, D. C. to the Pacific Coast is \$1.20, for example, and we pay 40 per cent of that, or 48 cents for a message. The basic commercial rate for a night message between these points is 60 cents--so we pay 24 cents.

A very important point to consider in sending telegrams is the difference in time between the places involved. There is no use, for instances, in sending day messages at such a time that they will reach us here at Washington after 4:30 pm., our closing time. They would be held until the next morning for delivery after 9 am. Thus a message sent from a point having Central Time at 3:15 p.m. would have no change of reaching the Department before 4:30 p.m., so that a night message would serve the same purpose at a much lower cost. On the same basis, a day message filed at 2:15 Mountain Time or 1:15 p.m. Pacific Time, would be received at Washington, D.C. too late to be acted upon that day.

Consider, then, in sending telegrams (where air mail or radio is not practicable) whether the cheaper night rates would not serve. It is not necessary to consider whether a night message or night letter be sent, as the telegraph companies as a matter of policy give us the cheaper rate. This is not true of day messages and day letters, however. In using them be sure to find out which would be cheaper.

ADMINISTRATIVE NOTES

Personal Telephone Calls "The Department has for a number of years permitted the placing of personal telephone toll calls over the Department's local telephone facilities," says Mr. Schoenhals in a memorandum of February 6th, addressed to section leaders, "with the understanding that the charges would be collected either by the accounting offices of the various Bureaus or by the Department Telegraph and Telephone office. When this privilege was granted, the number of employees was not large, and many of the offices were housed in small buildings without pay station facilities.

"The personnel has greatly increased and the number of these personal calls has grown to such proportion as to constitute a serious burden on the personnel of the Telegraph and Telephone Office in handling the calls, maintaining the necessary records, and in making the collections.

"In view of these circumstances, effective immediately, it will not be possible to allow outgoing personal toll calls to be made from Washington over the Department lines to any points within the metropolitan District of Columbia area. This is in addition to the restriction already in effect which prohibits the use of Government telephones for making personal local outgoing calls.

"The metropolitan District of Columbia are for the purpose of this memorandum will be construed as extending to such places as Alexandria, Clarendon, Hyattsville, Berwyn, Bowie, Falls Church, Fairfax, Rockville, Laurel, etc., and in fact to all points to which the toll charge is fifty cents or less.

"It will be appreciated if this is called to the attention of all members of your staff in Washington."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albay, Ga.

"It was very interesting to find that the pecan leaf samples taken the last of November and just at leaf fall, contained from 1.15 to 1.25 percent nitrogen," he comments in his report for the week ending January 13.

"Leaves caught a few days earlier by a freeze, contained approximately 1.50 per cent nitrogen."

ADMINISTRATIVE NOTES

Patents A "Specila Order" from the Secretary, dated January 9, 1934, reads:

"Under Rule 67 of the Rules of Practice in the United States Patent Office, patent applications in the same class of invention filed in that office are, so far as practicable, examined and disposed of in the order in which they are filed. For various reasons however, specified in the rule, some applications may be given preferential consideration, including those which are deemed to be of peculiar importance to some branch of the public service and when for that reason the head of some department of the Government requests immediate action and the Commissioner of Patents so orders, in which event the head of the department involved must be represented before the Commissioner.

"In the past, there has, at times, been some confusion in determining those cases subject to preference under the rule, in so far as this Department is concerned. It is not considered advisable to ask immediate consideration of patent applications which are merely thought to be meritorious or of general interest to the public. Preferential consideration should be sought in those applications only which are directly and substantially of peculiar interest or importance in the Department of Agriculture. This interest may be based upon business and financial considerations or possibly in some cases upon the unusual relation of the invention involved to the work or problems assigned to this Department.

"In all cases where special consideration of a patent application as above discussed is desired, the head of the Departmental branch concerned with the subject matter of the application should submit his recommendation to the Secretary, through the Solicitor, together with a full disclosure of the facts and circumstances justifying the procedure urged. In order that a proper conclusion may be reached by the Secretary, a copy of the patent specification involved should be submitted for consideration together with the serial number and filing date of the application."

Legal Language Apropos legal matters, Mr. T. Ralph Robinson writes that in a legal document he recently encountered he found the following wording: "...in open, notorious, hostile, public, continuous, exclusive, uninterrupted and peaceful possession and occupation of said lands."

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., March 1, 1934

No. 5

Vegetative
Propagation
of the Lily

Dr. David Griffiths makes his appearance in the Royal Horticultural Society's "Lily Yearbook for 1933" (Conference Number) with an interesting discussion of methods for the vegetative propagation of the lily. Seed propagation, of course, is the paramount method, perhaps, of reproducing the lily at present. Such a condition is likely to be the case even with perennial plants so long as they remain in a state of nature.

However, when horticultural varieties originate, the nurseryman must resort to a process of division of the individual plant in order to perpetuate the characteristics of the sport, selection, mutant or seedling, as the case may be. We have learned no way as yet of perpetuating plant characteristics as effectively as by this process of division. The lily is very amenable to vegetative methods of increase, and Doctor Griffiths' paper describes the bulbil, split, stem cutting, stem bulblet and scale methods. One or more of these methods may be used in the reproduction of all species and varieties of the genus *Lilium*.

"A lack of appreciation, or possibly in some cases a lack of knowledge of the efficacy of such methods, may account for the loss of some very wonderful lilies which have been originated in the past," he says. "The origination of a beautiful hybrid lily does not in itself add much to the lily business of the world. That individual seedling must be multiplied by vegetative means; then, if worthy, its perpetuation is assured. If the lily is stuck away in the originator's garden, more than likely it will disappear with him."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"The frequent periods of warm, dry weather have permitted the completion of a great deal of the field work usually carried on in the spring," he writes on February 5th. "Although this means our field work has been done easily and cheaply, it also means that there has not been the winter rainfall necessary to supply storage water for summer irrigation. The situation is very serious. Unless February, March and April have abnormally high rainfall, there will be a shortage of irrigation water in the Valley this summer. A short airplane trip over the mountains yesterday showed no snow at all except on the higher peaks. I guess pear production here will be reduced this coming season without Government aid....The warm weather has resulted in fruit bud swelling, with bud development now about two weeks ahead of normal. I suspected that root growth had started, but careful examination of nine Anjou trees showed no new growth as yet."

He had previously written: "The 1933 pruning results show that the removal of blossom buds by spur pruning gave nearly as much shoot growth as an equal blossom bud removal accompanied by heavy branch heading-back. Although the spur removal is more expensive than heading-back, it does not reduce bearing area and does remove weak spurs which rarely hold their fruits. It occurred to me that spur pruning might help materially with those weakly-growing trees so often pointed out by a grower."

"In spite of a great many interruptions, the analysis of 11 fruit samples and 11 shoot-tips samples was completed. I was surprised to find that thinning off fruits on entire trees had very little effect upon the carbohydrate content of the fruit. The fact that the fruit thinning had no apparent effect upon carbohydrate content of the shoots was not so surprising, since analysis of York Imperial apple spurs from Hancock had shown the same condition."

A. D. Shamel, Riverside, Calif.

"On last Monday we listened to reports on the experimental use of zinc sulfate for mottle-leaf in citrus and little-leaf in deciduous fruit trees by members of the staff of the California College of Agriculture at Berkeley and the Citrus Experiment Station here," he writes February 12th. "Many citrus growers are using zinc sulfate rather extensively now for the cure of mottle-leaf and the control of brown rot."

Charles L. Smith, Austin, Texas. (Texas Pecans)

Reporting for the January 29-February 10th period, he says "We had 9.13 inches of rain in Austin during January, breaking a 70 year record. With the rains in December and January, vegetation has come back. Clovers, grasses and cover crops are growing rapidly. We have experienced a very mild winter so far. Work on germination tests of pecan nuts is being carried on, as well as attempts to root cuttings."

THE "TEXAS NAVEL ORANGE."

Texas Citriculture for February grows quite enthusiastic over the orange which is being called the "Texas Navel." "To give the Texas citrus industry an orange well adapted to conditions here and equalling in excellence the best in California and Florida, is obviously an achievement of importance," it says. "This has apparently been accomplished through the development in our citrus area of an orange now officially recognized as the Texas Navel because it has received more attention here than elsewhere. It may be said parenthetically that the Texas Navel Orange was discussed at some length in the October, 1932, issue of Texas Citriculture.

"When W. H. Friend took charge as superintendent of the new Texas Experimental Station in the Lower Valley in 1924, it has become known that budwood from an exceptionally promising strain of navel orange was available at the U. S. Department of Agriculture. This strain had originated in Bahia, Brazil, as had that of the Washington Navel many years before. The latter, so successful in California, was not proving altogether satisfactory to Texas citrus growers, and for this reason Mr. Friend secured some budwood of the new variety. The Station having no nursery at that time, the budding onto sour orange root stock was handled at a leading nursery, where the young growths received excellent care during the severe winter of 1924.

"In April, 1925, they were set in the orchard at the Station. The first two crops of fruit were too light to have much significance, but those since 1930 have shown the distinctive qualities of the oranges and the exceptional productivity of the trees. Somewhat smaller than Washington Navels, the fruits have been found to be superior in their tangy flavor, and in their fine texture and relative seedlessness and freedom from rag. Experts from other citrus regions have pronounced the Texas Navel the Lower Valley's best orange.....

"The tree which is the ancestor of our Texas Navels had when viewed in Bahia in 1914, a height and spread of about twenty feet and was producing abundant crops of superior fruit at the age of forty years..."

NEWS LETTER readers may be interested to know that it is quite likely that one of the men viewing that Bahai tree back in 1914, was our associate, A. D. Shamel. He and P. G. Dorsett and Wilson Popenoe looked up the navel orange of Bahia about that time and brought in to us the propagating material giving rise to the "Texas Navel." Like Topsy, the name appears to have "growed," as I do not recall that the Department was ever asked to assist in the christening of its child. Of course, budwood from this Shamel-Dorsett-Popenoe introduction was rather widely distributed but as in the case of the Washington Navel, appears to have hit just one satisfactory spot. Some four or five strains were sent out.

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

Reporting on the period from December 17 to February 10, he says: "The period of this report covers one of our busiest seasons and hence the absence of weekly reports for some time. During the period construction work under NRA, field improvement work under CWA, pruning of the experiment plots at Chico, Elk Grove, Fresno, Oakville, and Shafter have been completed. Incidentally, during the period we had to be construction engineer, draughtsman, cement worker, finisher, timekeeper and report writer in addition to our regular work! However, we think the results obtained were worth the effort. The two-story laboratory was completed in December. The CWA projects were completed on January 30th. The contract covering the residence at the Fresno vineyard plot was handled in January and work started on February 6th.

"During the period about 20,000 grape cuttings were made. Nursery vines were taken from the nursery rows and heeled in for future use. Some 6,000 grape seeds, the results of last season's breeding work, were planted in the greenhouse during January. About eight acres of young vineyard were wired with two wires forming the grape trellis for the new experiment plots.

"Approximately three acres of old vines were removed and the land surveyed and leveling operations started to bring the land to grade for planting of alfalfa for soil improvement. Three acres of land leveled last season has been seeded to alfalfa.

"As the vines were removed, sections were made of many stock and scion unions. Approximately 250 stock-scion unions were saved for measurements of stock, scion, and enlargement at the union. Tracings have been made of some stocks and scions and area computed by a planimeter. Summary of these data is in progress."

C. E. Schuster, Corvallis, Ore.

"Pollination on the Barcelona is completed--by far the earliest that pollination has ever been wound up," he writes on February 3d. "Observations in some orchards located in warm favorable places have shown that the flowers were past maturity for several days.

"Almonds are in bloom, with early plums very nearly ready to bloom, peaches showing pink in cases, and some cane fruits leafing out."

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

Writing on February 10th, he says: "A mixture of snow and sleet fell intermittently Saturday. The temperature hovered within the twenties all day, with a strong east wind, shifting to northeast. The ground froze slightly in exposed places. By nightfall the country was white with about one-half an inch of snow, mostly in felled form. It was the most snow that has been seen here for several years; some of the older residents say 35 years, others 20. It is safe to say, however that no children of school age ever saw the like of it before at Albany,"

John C. Dunegan, Fayetteville, Ark.

"The *Bacterium pruni* inoculation experiments were examined during the week and practically every twig inoculated has several small cankers developing about the punctures made by the hypodermic needle," he writes under date of February 17th. "The non-inoculated check twigs show no necrotic regions about the punctures."

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"The new creations resulting from previous crosses are being grafted upon trees in Field 6 which did not produce nuts of commercial value," he reports for the two weeks ending February 10. "These trees have been labeled and grafting is being done. The distribution to responsible growers of trees 8-31 and 8-32 has been given careful attention and has taken a considerable amount of the time during this period."

He had written previously that some more field data had been collected upon the walnut pollination experiment. "Three talks have been given at three districts in the San Joaquin Valley regarding the pollination work, with special emphasis being placed on what the growers may do to increase the crop where dichogamy is responsible for the lack of bearing. Also at these meetings some of the growers reported rather surprising gains due to the artificial pollination in their orchards last year."

"The nursery trees from the promising new almond creations, which we call 8-31 and 8-32, have been dug and heeled in, ready for delivery to growers who will try them out in various sections of the State. These trials are necessary because it is advisable to determine whether the plants will do as well in other districts in California as they have done at Davis."

FRUIT DISEASES

J. R. Cole, Shreveport, La.

"I spent most of Thursday in the Bolinger orchard planning my studies of the bunch disease," he writes under date of January 27th. "Mr. Bolinger is having most of his native trees cut back for too-working to the Stuart variety, and I selected the trees that I want for experimental purposes.

"One interesting observation that I made was on an old tree that was cut down last winter. The tree was about two feet in diameter and was cut about one foot above the ground. Sprouts averaging about 18 inches high have sprung up from the roots, growing around the old tree stump. Practically all of the young sprouts were affected with the bunch disease. Evidently the old tree was effected with the disease also. I don't remember ever having seen this condition with rosetted trees. If this disease should prove to be infectious, I believe that an inspection should be made of the trees in the Red River Valley at the earliest possible time. All cases of the disease that we have found so far have been in the above Valley....."

John C. Dunegan, Fayetteville, Ark.

Writing on January 27th he reports: "The late fall inoculation experiments with Bacterium pruni, mentioned in previous reports, were examined during the week and the inoculations made on November 17, November 24, and December 8, now show small cankers developing around the needle punctures. The check twig shows no pathogenic symptoms."

Paul W. Miller, Corvallis, Ore.

"The filbert blight pathogene was isolated during the past week from dead buds collected from infected filbert trees," he writes on February 3d. "While the pathogene was recovered in only a relatively small percentage of attempts made, the results seem to indicate that dead (blighted) buds may, to a limited extent, carry the blight organism over winter. The pathogene was recovered in a relatively large percentage of attempts made from blighted twigs ranging from 1/8 to 1/2 inch in diameter at the point where the diseased tissue merged into the healthy tissues.

"Milk weather continues to prevail. Buds on certain early varieties of walnuts, namely El Monte, are swelling. The period of pistillate bloom in the Barcelona variety of filbert is just about over. Last year the blooming period of the Barcelona extended to about March 3, indicating that the present season is about a month earlier than last year."

FRUIT DISEASES

Paul W. Miller (continued)

In his report for the week ending February 10th, he writes: "Attempts to recover Ps. juglandis from soil taken from under an infected El Monte tree at Corvallis, Ore. were negative. Results of these and past studies seem to indicate, therefore, that Ps. juglandis is not carried over in the soil.

"Attempts to recover the filbert blight pathogene from soil taken from about infected filbert trees were also negative. It would appear from these studies that the filbert blight pathogene is not carried over in the soil.....

"Mild weather continues to prevail. Early varieties of peaches are coming into bloom. The period of pistillate bloom in the Barcelona variety of filberts is over and leaf buds are beginning to open up."

Lee M. Hutchins, Fort Valley, Ga.

"Prunus mume has been in bloom for several days," he reports on January 27th. "Of course, peach trees propagated on this stock, as well as on several other rootstocks in our experiments, are still dormant. The winter has been too warm, and unless we have continued cold during the next few weeks there is a strong probability of prolonged dormancy effects on the southern border of the commercial peach belt in Georgia."

Crown and Root rot of Peonies Nellie A. Brown is the author of "A method of Control for Crown and Root Rot of Peonies," American Peony Society Bulletin, December, 1933, pointing out that while it has been well established that submerging peony roots in hot water at a temperature of 120 degrees Fahrenheit for thirty minutes kills the root-knot nematode, it is not so well known that the same treatment may be used for roots affected with crown and root rot (several different fungi are known to cause these rots) and Lemoine disease. The recovery also is more lasting in the case of root rot, for with proper depth of planting and special culture after treatment, the roots need not be attacked with rot again.

New Lilies for America. And, speaking of flowers, HORTICULTURE for January 15, 1934, prints the paper presented by Doctor Griffiths at the 30th Annual Meeting of the American Society for Horticultural Science at Boston Last December--"New Lilies for America."

ORCHARD HEATING IN ENGLAND

Our Daily Digest quotes from the Farmer's Weekly (South Africa) for January 10:

"South African farmers whose orchards are endangered by late frosts should be interested in a British invention for orchard heating which is obtainable at a low initial cost and is cheap to run....Orchard heating has not met with general commercial application in Britain because the American apparatus that has been available until lately has been too costly to justify its general adoption.

"Moreover, the theory and practice of orchard heating is not understood in this country nor is its value realized, so that although about 3,250,000 heaters are in use in American orchards, British growers have no convincing data on which to work.

"All this has been changed by the work of an English amateur, a Mr. Harrington, who invented a simple type of oil burner that costs only a few shillings and burns a heavy oil that is comparatively cheap....

"The oil heaters are placed at intervals through the orchard at the rate of about 40 to the acre. These heaters, which are large sheet-iron canisters, are charged with oil overnight and remain ready for use when wanted.

"A thermometer connected by wire with an electric bell in the grower's house gives timely warning of an approaching frost, which usually occurs between 2 and 4 a.m. and is not dangerous till the mercury falls to 30 degrees.

"With a hand blow-lamp of the common type, a man can light the burners almost as fast as he can walk, and they are left alight till danger is past. Assuming that the lamps are lighted four times a year, the total outlay should not exceed 15 pounds an acre--an expenditure that may well be saved several times over...."

ADMINISTRATIVE SPECIAL

Job Printing and Binding. We have just been notified that all orders for job printing and binding needed for the present fiscal year must be submitted prior to April 1, in order that they may be charged against the appropriation for printing and binding for the current Fiscal Year. After that date no printing orders will be honored up to June 30 except for printing and binding required for emergency purposes. Therefore, careful consideration should be given to your needs at this time and orders placed with our Business Office not later than March 25, in order to insure their acceptance by the Bureau prior to April 1.

FRUIT AND VEGETABLE HANDLING TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

How true it is that the "flowers that bloom in the spring, tra-la, have nothing to do with the case, tra-la," for our friend Diehl sends along a clipping showing 40 varieties (kinds) of flowers picked in Seattle--no, not in the spring--in midwinter! These include Japanese anemones, snapdragons, chrysanthemums, roses, phlox, primroses, jasmine and daphne.

These 40 different kinds of flowers were gathered by the faculty and students of a highschool and grouped in a vase or bowl to make a striking picture. And these 40 were collected in two days, the week's collecting efforts bringing the total up to fifty kinds. The collection recalls a similar one made about ten years ago by Ezra Meeker in a year of abnormal weather, but the varieties obtained by the high school outnumbered by ten those collected by him, and his collecting period extended over a period of one month, instead of one week.

At the time the notes were sent in, February 3, Mr. Diehl was figuring that the winter might come to a close out Seattle way without there having been any real freezing weather. In the Puget Sound area, the temperature minimum on a few occasions has been 32 degrees F. Well, we coasted along like that in Washington, D.C.--and then encountered a period when Mr. Thermometer crawled into his hole and pulled the hole in after him, leaving us with a six-below-zero record, the lowest for a quarter of a century.

However, let's turn to cheerful subjects: "New leaf growth is in evidence on much of the deciduous vegetation and the lawn grass is quite as green as in the summer time and calls for occasional mowing. There is now some fear that a sudden cold spell may wreak havoc in the vegetation, but the aforementioned evidence does not now suggest the coming of such a calamity, at least for the Puget Sound area.

"There has been one more flood since the widespread one in December," he adds, determined to show that bright clouds have dark linings, "making for some sections something like 8 to 10 overflowings this season. The effect of this flooding in some sections has been to destroy wholly or for several seasons the usefulness of the land for crop raising. In some cases, tons of gravel now overlay farmland which was formerly characterized by highly fertile silt loam river bottom soil."

We are pleased to credit H. C. with being among the first to get his progress report into the hands of Doctor Auchter.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C.O. Bratley, New York City.

"Early in the first week of January a coupling-burst in the ammonia coils in an apple cold storage room in Trenton, New Jersey," he writes. "Apparently considerable of the gas escaped before the leak was discovered. Two weeks later the fruit in the room was examined by a State inspector who found about two-thirds of the 4,000 or so bushels showing injury. A copious sample of the injured fruit was sent to us for observation. The injury centered principally around the lenticles making slightly sunken dark brown spots one-sixteenth to one-eighth inch in diameter. The flesh around uncorked wounds was more extensively injured. In some of the riper Golden Delicious the entire surface of the fruit was brown.

"Grimes, Golden Delicious and McIntosh were worst affected, although there was injury on all other varieties--Ven Davis, Rome, Delicious and Stayman. The first three varieties named were in a riper stage of maturity than those in the latter group.

"Most injury occurred in the upper three layers of containers, except along the alley-ways where fruit in other layers was discolored. Apples in other rooms of the storage were not affected."

ADMINISTRATIVE NOTES

Roundtrip Tickets. We have been advised by the Bureau's Accounting Office that a considerable number of suspensions are being made due to the fact that single-trip (one-way) tickets have been purchased where roundtrip tickets at much reduced rates could have been secured.

Unless satisfactory explanations are furnished in such cases, showing clearly that the roundtrip ticket would not have answered the purpose, the suspensions will stand. It is therefore suggested that when planning trips careful investigation be made of the roundtrip fare, which can very frequently be obtained for short periods at a substantial reduction, and that such tickets be purchased where it is at all possible to use them. Where roundtrip tickets are not purchased, an explanation should appear in the account showing why the single-trip ticket was desirable, to avoid the possibility of suspensions being made.

Cabbage

Diseases Dr. J. C. Walker has prepared a revision of "Diseases of Cabbage and Related Plants," which is now issued as Farmers' Bulletin No. 1439 (superseding the old Farmers' Bulletin Nos. 925 and 1351, of course).

ADMINISTRATIVE NOTES

Purchases near end of the Fiscal Year Our Business Office tells me that it is ready and willing to answer all questions concerning purchases near the end of the Fiscal Year--with one exception: "With What?"

You know, of course, that we have to avoid last minute purchases so far as practicable to avoid the suspicion of spending merely to prevent funds from reverting to the Treasury after June 30. We have to be in a position to defend beyond question any large items that may be purchased near the end of the fiscal year as being required immediately. After May 15, all requests for large purchases will require evidence of urgent necessity before they will be approved.

Following our practice of former years, the Business Office of the Division will appreciate it if early consideration is given to your requirements for equipment, materials and supplies for the remainder of the fiscal year, and lists of your needs furnished.

List of Equipment

1. This list should be divided in two parts, indicating in group "A" such things as you wish to have ordered immediately; and in group "B" items whose purchase should be held up until you notify us.

With this information we can take immediate action to secure bids without the necessity of unduly hurrying the various offices concerned. Purchases of articles in group "A" will be made immediately upon acceptance of bids. Acceptances of bids for articles in group "B" will be held until receipt of information from you to make the purchases. It is important, however, that notice to proceed with such purchases be received on or before May 1.

2. List of equipment needed but for which it is impossible to foresee funds being available this fiscal year, and which will probably be purchased in the first part of the next fiscal year if it develops that no funds are available this year.

Requisitions for Supplies

3. We will appreciate the quarterly field station requisitions for supplies (normally scheduled to be mailed to us May 1 and June 1) being forwarded on April 1, and suggest that they provide for sufficient supplies to last until the next scheduled requisition. This is with a view to avoiding the congestion which occurs both in our own property section and the Bureau's Property Room when a lot of orders come in during June. This situation, of course, results in many instances in delaying deliveries until after July 1.

ADMINISTRATIVE NOTES

(continued)

4. List of supplies of a specialized nature such as fertilizers in large quantities, seeds, spraying materials, etc., where the expenditures will run to \$25.00 or more. By combining orders and calling for bids on such combinations, it is frequently possible to purchase at a large saving.

In view of the conditions now prevailing with respect to the necessity of economically planning work to keep within the current year's reduced budgets, it is not our intention to imply that project leaders purchase supplies and equipment before June 30, which could very well be allowed to go over until after July 1. What we have in mind in offering these suggestions and warnings is to give you an opportunity to take advantage of the time between now and the opening of the spring and summer field work to compare needs with the available funds at your command for such purchases, and to notify our Business Office at the earliest practicable date so that we may have time to prepare bids where necessary and obtain proper competition on the supplies needed--or, in some cases, combine lists of similar material in a single bid in order to obtain the lowest prices.

All this is desirable in normal times, but you can readily see that with the added burden of Public Works and Civil Works projects, our business office needs all the time it can get in handling your orders, securing bids, and the like.

What we need to recall to mind is that it usually requires from a month to six weeks to obtain bids and have them acted upon. For this reason requests for bids submitted to us after May 1, in order to be favorably acted upon, require a special explanation to the Bureau's administrative officers showing the necessity for the purchases involved during the present fiscal year--and why the need could not be foreseen in time to place order sooner. And that must be some explanation in order to get by.

This matter, of course, is not merely a Division ruling, but a part of the Department's fiscal regulations, of which Par. 71 reads:

"All purchases at or near the close of the fiscal year for the sole purpose of expending surplus funds shall not be made."

While it is true that there is no longer any such thing as "surplus funds," we still have to avoid even the appearance of the late departed. If bids are asked and awards made before May 15, purchases may be held until a little later on the explanation that certain release of funds could not be known until June 1, say. And so on.

ADMINISTRATIVE NOTES

Pensions or EmergencyOfficers' Retirement Pay.

Office of Personnel and Business Administration Circular No. 247, dated Feb. 5, calls attention to Executive Order No. 6568 of

January 19, 1934, amending Paragraph X of Veterans' Regulation No. 10, as follows, effective January 19, 1934:

"1. Paragraph X of Veterans' Regulation No. 10, as amended by Veterans' Regulation No. 10(b), is amended to read:

'X. No person holding an office or position, appointive or elective, under the United States Government, or the municipal government of the District of Columbia, or under any corporation, the majority of the stock of which is owned by the United States, shall be paid a pension, or emergency officers' retirement pay, so long as he continues to draw a salary from such employment, except (1) those receiving pension or emergency officers' retirement pay for disabilities incurred in combat with an enemy of the United States or for disabilities resulting from an explosion of an instrumentality of war in line of duty during an enlistment or employment as provided in Veterans' Regulation No. 1(a), part I, paragraph I; (2) those persons so employed whose pension is protected by the provisions of the Act; however, the rate of pension as to this class shall not exceed \$6 per month; (3) those unmarried persons whose salary or compensation for service as such employee is in an amount not in excess of \$1,000 per annum, computed monthly, or any married person or any person with minor children whose salary or compensation for service as such employee is in an amount not in excess of \$2,500 per annum, computed monthly; and (4) widows of veterans.'

"2. Veterans' Regulation No. 10 is amended by adding a new paragraph to read as follows:

'XXI. Any person entitled to monetary benefits under the provisions of title I, Public, No. 2, Seventy-third Congress, or section 20, Public, No. 78, Seventy-third Congress, may renounce his right thereto. The application renouncing the right shall be in writing over the person's signature and upon filing of such application, payment of monetary benefits and the right thereto shall be terminated and he shall be denied any and all rights thereto from date of receipt of such application by the Veterans' Administration. The renouncement provided for herein shall not preclude the person from filing a new application for pension at a future date, but such application shall have the attributes of an original application and no payment will be made for any period prior to the date thereof.'"

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March 1, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., March 15, 1934

No. 6

A Prodigal Comes Home! A man, meeting an acquaintance on the street car, inquired: "And how is your companionate marriage working out?" The other man shook his head despondently. "Terribly," he admitted. "I've lost my wife's address."

As the months have passed without a contribution, we have been wondering if Dr. F. P. McWhorter of our Diseases of Ornamentals section had lost the NEWS LETTER's address. But we figured that this couldn't be the answer, for his letters came to us through his section chief--and it simply isn't possible for one to lose the address of his section chief. However, the prodigal has returned, and in a letter to Doctor Weiss, dated Corvallis, Ore., February 14th says: "In explanation of my delay in getting out news letters, I may say that when I returned I was too busy to write. I was too busy so long that I became ashamed to write. Finally, I have waited so long that I have nothing to write.

"I found that Mr. Millsap had been very industrious in accumulating records of experiments in progress," he adds, on second thought, "and has provided me with a great mass of well recorded data to digest. For example, the records on our first lily seed treatment work: This has progressed over a considerable period and we can report that the lily seed as represented by many varieties of lilies is decidedly tolerant to this infection. There are localities here in Oregon where treatment of lily seed against soil-borne infection is very important. We are setting up large-scale field trials very soon.

DISEASES OF ORNAMENTALS

"Recently I gave a talk before our local chapter of the learned Sigma Xi. For the enlightenment of these individuals we demonstrated the x-body which develops in the tulip plant as the result of stimulation from one kind of virus concerned in the breaking of the flower. I believe this is the first time that this has been done and the idea was well received since the demonstration was of both stained and unstained material handled by means of critical illumination, which we have developed here with considerable success.

"However, before bragging about the use of the critical illumination which we have borrowed from Mr. Belling, I must comment on the mathematical proof of our theory of tulip breaking which was presented for the benefit of the physicists and mathematicians present. In our original notes we named plants approaching the color removing virus condition, virus 1; those of average breaks, virus 2; and those of dark break, virus 3, or type 3. During the season of 1932-33, we proved our theory that there are two viruses concerned, and that the normal condition results from various mixtures of these. Therefore, we had a slide prepared with the following intricate mathematical formula, showing the proof of this theory:

$$\begin{array}{r}
 \text{Type 1 - Color removing virus} \\
 \text{Type 2 - Normal break} \\
 \text{Type 3 - Color adding} \\
 \hline
 1 + 3 = 4 \qquad 2 / 4 = 2 + 0
 \end{array}$$

∴ Normal break of tulip is the combination of 1 and 3

"I was fixing to brag* about the use of the critical illumination outfit which we have developed along the line suggested by Mr. Belling. To illustrate its use: We can find in the course of a routine examination an object, let us say, measuring .3 of a micron in diameter; within 40 seconds after finding the object we can have a photographic record made and go ahead with the routine examination. This process is proving of immense use in recording the finer details of the endless ornamental disease problems and specimens which come through this office, and will lead eventually to a photographic history of all the common ornamental diseases found in the Northwest.

"In this connection, I would like to point out that Mr. Millsap has been very helpful in arranging the various mechanical requirements which perfecting this outfit has necessitated."

*Note.--To prove he was not just bragging, Doctor McWhorter sent several samples of photomicrographic art, to which he has long been devoted, but with his new technique he has assumed the full status of a Patron! For example: Photographs of the nematode Aphelenchoides fragariae, magnification 900 to 1,000 x, showing details clearly which nematode artists usually draw in order to depict! Ed.

FRUIT AND NUT PRODUCTION

Strawberries! When we thrust our modesty into the background some weeks ago and did a little gentle horn blowing about the "lucky seven" collection of strawberries we have given the American growers, we had the misfortune to refer to one as the Bellman, instead of Bellmar. This inadvertent twisting of the sex from "mar" to "man" was listed as a typographical error, meaning that we tried to do some other work while reading proof, but anyway we have waited for this opportunity to prove that we do know how to spell Bellmar.

And now that the opportunity is here, we find ourselves willing to overlook our error in view of the fact that we were 100 per cent correct in referring to the Dorsett and Fairfax. A catalogue from a Salisbury, Md. concern has come to us, a color picture of the Fairfax on its cover, and within an amazing tribute to the hybrid and the Dorsett.

"Never before in 48 years' experience in growing strawberries have we seen any varieties look as good to us as Dorsett and Fairfax," says the notice. "Both have proved far superior up to this time to all other early varieties."

A table shows the Dorsett and Fairfax topping a collection of varieties with a production of 6,640 and 5,120 quarts per acre in 1932 (a very dry year), and 11,775 and 11,214 quarts per acre in 1933 (a very wet year). The percentage of good to fancy given for the Fairfax is 90; and for the Dorsett 83. Incidentally, another of the "lucky seven," the Southland, while producing 4,480 quarts to the acre in 1932, and 8,417 in 1933, rated 94 per cent of good to fancy fruits.

As it happened, these years, one very wet and the other very dry, were sufficient to provide almost an ideal test of variety response to wet and dry conditions--under both conditions Dorsett and Fairfax topped the list at Salisbury.

Since the Bellmar produced 2,480 quarts to the acre in 1932 and 10,092 in 1933, with 84 per cent good to fancy, it may be that we showed good judgment in misspelling its name though, on the other hand, the typographical error may have discouraged the variety. Strawberries are quite sensitive, as is shown by the ease with which they blush.

The comments on the Dorsett and Fairfax go on to say that statistics are inadequate in that they fail to show the much larger average size of the berries, the greater attractiveness and the ability to stand the extremely wet moisture conditions displayed by these two hybrids. And no appreciable damage from frost has been noted.

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"While eastern States had subnormal temperatures, the Rogue River Valley enjoyed clear, warm and sunny days," he writes February 10th. "The pear blossom buds have started a rapid swelling, with many showing a loosening of the bud scales.

"Our irrigation water supply looks very low. The Medford District may have enough, although growers may have difficulty getting it as frequently as necessary. The Talent District will have enough for only one irrigation. The other, smaller districts have sufficient water.

"Mr. Work found that, although the moisture in the top foot of soil was up to 85 percent of the maximum available capacity, the third foot was little above the wilting point. He is therefore urging growers to utilize all early (run-off) water to bring the soil up to field capacity at the beginning of the season. Orchards receiving a fall irrigation for the cover crop have more moisture at the lower depths."

Geo. P. Hoffman, Meridian, Miss.

Writing from the U. S. Pecan Field Station on February 24th, he says it is interesting to observe the great difference in the cover crop ground coverage and the reduced winter injury to the Austrian winter peas where the seeding rate was a mixture of twenty five pounds each of vetch and peas to the acre.

"The peas in the case of the usual rate of seeding per acre of fifteen pounds each vetch and winter peas have been badly injured by cold and the ground coverage of the combination crop is decidedly much lighter than where the heavier rate of seeding was used," he says.

In an earlier report he made some interesting comments on the strawberry variety planting.

"Our strawberry variety planting is showing interesting differences," he noted. "Some varieties appear to be remarkably resistant to leaf spot, while others are rapidly becoming covered with leaf spot with resulting inactive foliage.

"It is interesting to note that some varieties now have fruits which is about one-third grown (this was early in January), with others breaking bloom and still other varieties fully dormant. There is evidence of some of the varieties in this collection offering considerable promise for this section by reason of earliness and evident ability to resist leaf spot."

FRUIT AND NUT PRODUCTION

Valencia Oranges. Reporting on the commemoration of the first commercial planting of Valencia oranges in California, made by R. H. Gilman At Placentia in 1880, the California Citrograph for March tells us that our associate, Mr. A. D. Shamel, discussed the history of this variety, which has now become one of the most important commercial Citrus varieties of the United States.

Mr. Shamel stated that the official figures show more than ten million trees of the Valencia orange in California which--believe it or not--tops the Navel variety, of which only some eight million trees are now growing in the State. Mr. Paul S. Armstrong, general manager of the California Fruit Growers Exchange, estimated the Valencia as comprising 61 percent of the California orange production, and 46 percent of the total for California Citrus.

Incidentally, the same issue of the Citrograph contains a paper by Mr. Shamel and C. S. Pomeroy on the "Relation of Amount of Foliage to Fruit Size in Valencia Oranges."

Oranges: Luxury or Necessity? In this connection it is interesting to note that the December issue of Hadar (the monthly journal devoted to the Citrus industry of Palestine and formerly, as I recall it, known as the Palestine Citrograph) contains an interesting paper on a recent discussion of the orange as a luxury or necessity--in which is reviewed a debate in connection with the increase (and subsequent repeal) of the Swiss duty on Citrus fruits.

The debate took place between one of the farm leaders, who regarded the imposition of a luxury tax on Citrus as a fair means of remedying adverse trade balances, and a veteran physician, whose 38 years of experience in medical practice have shown him that Citrus fruits are an extremely useful aid in fighting the deficiency diseases prevalent in Switzerland.

The doctor, who won his case, as indicated by the repeal of the duty, contended that the luxury tax advocates closed their eyes to the fact that the nutritive and hygienic value of the orange is universally recognized--and, furthermore, that the orange could not be satisfactorily replaced by any Swiss winter or spring fruit. "Our race suffers from deficient nutrition. Citrus fruits are a proved remedy. Don't close the door to any such commodity," he urged. "Shut out other articles which are unnecessary--or even harmful."

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

Writing of a short field trip to Palo Alto, Chico, and Sutter County the middle of February in connection with root growth and cherry culture studies, he continues:

"A protracted drought was badly shattered just as I started excavating for the installation of the glass, so not as much was accomplished as I had planned. I was pleased and somewhat surprised to find that the type of soil in the fruit tree breeding plot is very well adapted to root study work. I hope that after a little preliminary observation it will be possible to extend the work down there as the mild summer temperatures seem to be almost ideal for securing characteristic root performance.

"At Chico, the peach tree roots have started their usual vigorous spring activity although at least a trace of activity has been observed during all visits throughout the past winter. On February 20th, eighteen days after installing glass, tips of new roots were in view."

A. D. Shamel, Riverside, Calif.

Writing on February 19th, he said: "We spent last week at Merced and Shafter, mainly at Merced, where we replanted our experimental progeny peach plot on the Fancher ranch of the California Packing Corporation with dormant-budded nursery trees. Some of the previously planted progeny trees were left undisturbed and those that were taken out were replaced with new selections. The replants for the most part had been budded last fall with buds obtained from parent trees in those progenies where individual tree performance records have been carried on for a period of years and the parent tree selections were based upon such records and intimate tree knowledge gained through systematic work with these strains. In addition, some of the nursery tree replants had been budded to recently discovered limb sports that promise to be of value from the commercial and scientific points of view.

"Three of the strains of the proved canning peach varieties that originated as bud sports and have been isolated through systematic bud selection and progeny tests are being tested commercially on the Fancher ranch. These are the Early Sims, Early Paloro and Early Phillips. They are considered to be valuable strains and if the commercial orchard tests now under way confirm the previously made progeny tests, they will doubtless be widely planted by growers of canning peach varieties in the San-Joaquin Valley and Sutter Basin districts."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

Reporting on activities and observations for the February 17-24th period, he writes: "The winter transportation test trip party which has been wintering in Wenatchee awaiting the Weather Bureau's forecast of satisfactory cold weather over the Great Plains, made its departure on February 17th. Messrs. Mallison, Gorman, Hukill and Killingstadt (Western Fruit Express) accompanied eight cars under test including (1) Wet sawdust, (2) Inside control with wind-motivated fans for interior air circulation, (3) C. P. S. with wind-motivated fans, (4) Inside control, (5) thermostatically controlled alcohol heaters, (6) Small charcoal heaters, (7) Double collar (heatrola style) charcoal heaters, and (8) Check car with standard charcoal heaters, C. P. S.

"We have watched weather maps since the departure and have noted the most favorable barometric pressure formation of any time this winter and are in hopes temperatures were sufficiently low to give good contrasts between inside control and C. P. S. service, also the weather should have been ideal to test the wet sawdust car and automatic alcohol heaters.

"The stations at Yakima and Wenatchee have been confronted with a new problem in Golden Delicious storage. In both districts this variety has shown premature storage scald and breakdown. Fortunately we had samples in our storage from one of the growers having difficulty, so that we were able to throw some light on the problem this year. We anticipate that a new project will be outlined to cover this problem before next harvesting season.

"The long distance weather forecasts of the Cold Pack Laboratory in Seattle seem to be uncanny in their accuracy and have applied to Eastern Washington as well as to the Coast. Mr. Ryall reports apricots in bloom in Kennewick and they also expect commercial shipments of asparagus any time now. Some small growths have already been cut. In Wenatchee, maple buds are breaking and grass is growing in sunny spots. Bright weather with occasionally cloudy periods has prevailed. A great deal of pruning has been done, but on account of lack of water or money, not much dormant spraying has been done."

He had written on February 16th that Doctor Gerhardt found surprisingly little soft scald in his various lots of Jonathans stored for soft scald observations. "We were especially interested in observing that no soft scald was found at the late picking, regardless of the manner of storage. This is contrary to earlier observations and leads to the hypothesis that susceptibility to soft scald reaches a peak and then diminishes very late in the harvesting season."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Freezing of Tomatoes in Transit. "Freezing of Greenhouse-grown Tomatoes in Transit," is discussed in Department Circular No. 291, by R. C. Wright and T. M. Whiteman of our Division. Greenhouse grown and ripened tomatoes are marketed during the winter months when there is danger of freezing in transit. The investigation covered by this circular was undertaken to determine how long such tomatoes will remain unfrozen when exposed to a relatively low temperature in the usual commercial packages--the tomatoes were wrapped in tissue paper and packed in splint baskets which were in turn wrapped in paper, making a gross weight of about 9.5 pounds each.

While one basket was left at rest in a storage room held at about 20 degrees F., another basket was subjected to a ride in the "little red wagon". This consisted of a small child's wagon hitched to an eccentric gear operated by a motor so that the wagon traveled forward and back over a track provided with "bumps" to jolt the tomatoes somewhat as they would be jolted in transit.

In general the fruit in the undisturbed basket undercooled to a lower degree than in the disturbed or jolted basket in which most of the fruit undercooled but little before beginning to freeze. As might be expected, more fruits actually froze in the disturbed basket than in the undisturbed one.

In the jolted basket thermocouple readings showed that the first two fruits to freeze were located in the bottom corners. These began to freeze after approximately 6 to 10.5 hours without perceptible undercooling, while fruits in the corresponding positions in the other basket started to undercool after about 8 hours. One of these remained undercooled without freezing while one started to freeze after about 16 hours. The lowest undercooling point recorded in the jolted basket was 27.7 degrees F., while the lowest in the undisturbed basket was 23.2 degrees F.

TRUCK CROP DISEASES

W. D. Moore, Charleston, S. C.

"Potato planting continues at a rapid rate, with probably the greater portion of the acreage being completed this week," he writes under date of February 24th. "A decided increase in potato acreage is in prospect this season as compared to that of last. In view of the severe damage to the spring cabbage crop, spring acreages other than potatoes will be increased this year. This applies particularly to the bean and cucumber crops. There will probably be less of the small crops, such as carrots, beets, and turnips, than in several years."

ADMINISTRATIVE NOTES

Automobile Repair Parts. In view of the fact that the code of fair competition for the motor vehicle retailing trade limits the allowance of discounts on repair parts to authorized dealers or established service stations, there has been uncertainty as to what extent the former Government practice of obtaining discounts on such parts would be affected. The Comptroller General has ruled that since Government garages fall within the class of "Established Service Stations," discounts must still be obtained on repair parts when installed in Government operated garages. In all other cases dealers are under no obligations to allow discounts to the Government. However, discounts are to be taken when offered whether the repair work is done in a Government garage or otherwise. The Division of Purchase and Sales says:

"As indicated in a decision of the Comptroller General dated February 8, 1934, discounts on automobile parts are to be taken whenever offered by dealers. There should be no difficulty in securing the discount when parts are purchased for installation in Government-owned garages, the discounts allowed under such circumstances being--

"FORD - 30 per cent discount from list price current at time of purchase, except on those items marked 'not subject to regular discount' in the Ford standard parts price list on which parts 10 percent discount is allowed. Special price of \$6.75 now applies on Ford Battery.

"CHEVROLET, BUICK, PONTIAC - and all other General Motors cars and trucks - 25 per cent discount from price list current at time of purchase on any parts purchased from direct dealers.

"PLYMOUTH, DODGE, CHRYSLER, DE SOTO - 25 per cent discount from price list current at time of purchase. Discount applies only on parts covered by Company's guaranty. (Does not apply on battery, electric equipment, spark plugs, etc.) Applies on purchases from direct dealers only.

"CONTINENTAL - 30 per cent on parts classed as non-competitive, such as crankcases, cylinder blocks, etc. and 40 per cent applying on competitive parts such as pistons, pins, rings, etc. Applies only when purchases are made from authorized dealers.

"While only makes of cars not commonly used in the Department are listed above, fleet owners' discounts are also allowed on other makes of cars not named. Employees responsible for Department cars should inform themselves as to such discounts and insist upon their allowance when parts are purchased for installation in Government-owned garages. It is suggested that where a discount clearly offered by a manufacturer is refused by a dealer, the voucher, approved for the amount due after deduction of discount, should be submitted for preaudit with a statement of the facts."

Upon receipt of this decision, the Bureau Office of Accounts, which has been withholding payment on all vouchers for repair parts on which discounts were not allowed, released such vouchers for payment, and it is believed that checks have now been received on all such outstanding accounts.

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"The 28th annual convention of the Georgia-Florida Pecan Growers Association met in Albany this week," he writes on February 17th. Hereafter the association will function under the name of the Southeastern Pecan Growers Association. . . . E. D. Fowler showed the amounts of nitrates found in soils under different cover crop systems. The records represented monthly sampling between March and December, 1933. Little or no nitrates were found in Bermuda sod plots at any time during the season. The greatest amount of nitrates was found in a plot having a winter crop and cultivated during the summer. For other plots, the amount of nitrates varied, depending upon soil moisture, cultivation, and cover crop growing on the soil. G. F. Moznette discussed the subject of control of the black pecan aphid. He showed that the insect can be controlled by using nicotine sulphate diluted to 1-4000 in the last two scab sprays and one to two additional applications after the scab spraying season. He also brought out that aphid injury to the foliage, which often results in severe defoliation during the latter part of the summer, greatly lessens the blossoming and nut set the following season.

"The writer read two papers. One was on the injurious effects of Bordeaux mixture on pecan trees. It was shown that two harmful effects may occur; (1) a drouth complication if soil moisture deficiencies prevail during August and September, resulting in late summer defoliation, and (2) black aphid-Bordeaux complication. Usually very heavy aphid infestation follows the use of Bordeaux mixture on pecan trees if aphidicide is not used. Unsprayed trees had only light to moderate infestation and sulphur sprayed trees, without nicotine, were almost free of black aphids. The second paper dealt with the beneficial effects of zinc sulphate applied to rosetted pecan trees."

Lee M. Hutchins, Fort Valley, Ga.

The U. S. Peach Disease Field Laboratory at Fort Valley seems to have caught at least a whiff of the cold wave which visited with us at Washington, D.C. during February, for the weather records show temperatures of 20.4 and 20.0 on February 10th and 11th. However, this hasn't soured Doctor Hutchins' disposition at all.

"This cold was very necessary in order to bring the total hours at 45 degrees or below up to the point where peach buds may be expected to become active when spring opens up," he writes on February 17th. "At the end of January we had had only 602 hours of the required cold here at Fort Valley, and of course this meant that Albany was in serious danger. We have now had just about 800 hours. This is sufficient to bring Hiley out or formancy but Mayflower, Red Bird and Early Rose are not yet in the clear."

 ADMINISTRATIVE NOTES

That reminds me - that we have been reminded lately of a number of rather important paragraphs in our Administrative Regulations which are often forgotten:

Paragraph 710. Contributions; peddling. -- No circulation of subscription lists, or other methods of collecting contributions from the employees of the Department of Agriculture for outside organizations will be permitted.....

Peddling, canvassing, and selling tickets are prohibited in all buildings of the Department. Employees in charge of rooms will see that this regulation is strictly enforced and will report immediately to the Chief, Division of Operations of the Department when peddlers or canvassers appear.

Paragraph 712. Display of advertising matter. Display of advertising matter in offices and laboratories of the Department, including advertising calendars, is prohibited.

Paragraph 713. Personal articles lost or found. - All personal articles found by employees in the building or premises of the Department in the District of Columbia should be delivered to the Guard Office (Room 24, Basement, Administration Building) to await claim of ownership. Employees who may lose such articles in the places named should report the fact to the Guard Office.

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Copies of "The Press Service has asked to be furnished with advance
Mimeographes copies of all material prepared for issuance in mimeo-
Material. graphed or multigraphed form and intended for distribu-
tion to the public, so that such material may be utilized
so far as practicable in preparing press releases," says Bureau of Plant
Industry Memorandum No. 762, dated February 27, 1934.

"Hereafter in submitting material of this nature to be mimeographed or multigraphed," says Mr. Ryerson, "will you kindly send along with the original a carbon copy for this purpose."

 FRUIT DISEASES

M. A. Smith wrote from the Ozark Fruit Disease Laboratory on February 24th that an examination of Champion, J. H. Hale and Carman peach buds in the orchards near Springfield, Mo. during the week showed that only about 5 per cent of the buds were alive.

ADMINISTRATIVE NOTES

Imports In Circular No. 250 of the Office of Personnel and Business Administration of the Department, dated February 21, 1934, Doctor Stockberger says that the Post Office Department has called attention to an amendment of February 8, 1934, to Article 509 (b) of the Customs Regulations of 1931 as follows:

"(b) The marking required by section 304 shall include the name of the country of origin. The name of a subdivision such as a kingdom, principality, state, or province, or of a city within the country of origin is not alone sufficient. The term 'country' as used in section 304 is held to mean the political entity known as a nation. However, colonies, possessions, or protectorates outside the boundaries of a mother country shall be considered as separate countries."

This means, of course, that it is now enough to show the name of a city (London, Paris, etc.) no matter how well known; the name of the country (England, France, etc.) is required. Employees handling consignments from abroad, particularly where the point of origin is an important city, are requested to take notice of this change.

Addressing Mail, etc. Incidentally, Mr. Ryerson has sent out a memorandum calling attention to the importance of care in addressing mail. A report by the Postmaster General some weeks ago covering a count of improperly addressed mail received at 65 of the largest post offices from December 1 to 15, showed 1446 from the Department of Agriculture which required directory service and 1,018 pieces which had to be returned to the Department for better addresses.

As Mr. Ryerson generously points out, the record is fairly good in that only slightly in excess of 4 per cent of all the improperly addressed mail was dispatched by our various offices, but there is still room for improvement, as averaging on the basis of the check made, there are approximately 60,000 incorrectly or improperly addressed pieces of mail received from the Department of Agriculture at these 65 post offices in a single year--representing a decided burden of work.

Not only should all employees keep a close watch on this matter to avoid placing extra work on the Post Office Department, but because an improperly addressed communication is likely to cause delays which may interfere seriously with our work. Please check addresses carefully with your correspondent's letter, or the address records, to make sure the full address is being given correctly.

ADMINISTRATIVE NOTES

American The old proverb tells us that "It is permitted to the feline
Manufacture race to contemplate even a regal face," but while a cat may
look at a king, and a certain amount of liberty is allowed
even to human beings, a law is a law. Perhaps I can make this a little
clearer by quoting Mr. Swartz:

"An increasing number of suspensions are being made by the Bureau Accounting Office because of failure to accomplish the certificate showing that supplies or materials are of the production and manufacture of the United States," he tells me "Since this certificate is mandatory in order to meet a legal requirement, care should be taken to see that this statement is made covering every such purchase. We are advised that for small items, amounting to less than \$1.00, the personal certificate of the purchaser will be acceptable if he is satisfied that the materials comply with the United States production law, but in all other cases the certificate must be rendered by the vendor.

"The No. 1034 vouchers now being sent out from the Washington office bear a certificate stamp immediately above the space for the vendor's signature. It is possible, however, that some vouchers may have been sent out without the stamp, in which event it is suggested that a separate certificate containing the following, and signed by the vendor, be attached to the voucher:

This is to certify that the deliveries covered by this voucher are articles, materials, or supplies of the growth and production of the United States or of the manufacture of the United States, or of materials substantially all of the growth and production of the United States.

"Since this law is permanent legislation, it will be necessary to continue furnishing this certificate indefinitely."

The belief that you will be able to get along without attaching these certificates to your vouchers will cost you money and our accounting officers tears of sympathy.

For Married Tell your wives that the Bureau of Home Economics of the
Men only. U. S. Department of Agriculture has just issued a leaf-
let--it is No. 103 in the Department's series--discussing
the quality and makeup of sheets and pillow cases--"Quality Guides in
Buying Sheets and Pillowcases" is the exact title. The thing of impor-
tance, however, is that it emphasizes the point that sheets should be
wide enough--and long enough! The Italics are ours and we wish the
sheets were--the long ones.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., April 2, 1934

No. 7

Vegetable Standard- There has just recently been released for distribution Miscellaneous Publication No. 160, in the Department's series, "Descriptions of Types of Principal American Varieties of Tomatoes," which is of rather unusual importance and significance since it is the first of the publications reporting results of the work under Doctor Boswell's vegetable standardization and description project.

This publication, rather than attempting to describe and treat the synonymy of the hundreds of so-called varieties of tomatoes now listed in American seed catalogs, deals with only nine varieties which make up 85 to 90 percent of the commercial acreage of this country. Since this is the first publication to appear with reference to this program, the objectives and methods of work are briefly described.

The studies upon which the publication is based were carried out at Arlington Farm, Va., and in New York, Indiana, Michigan, California, and a number of locations in Texas. It was evident during the course of the work that a single stock of any given variety may vary more or less, depending upon the climatic and soil conditions under which it is grown. These differences in expression of varietal characters have been extremely confusing to the trade and knowledge upon this matter has been very greatly needed. This publication discusses in considerable detail the effects of different environmental factors upon the expression of individual varietal characteristics in the various sorts of tomato and illustrates these variations in considerable detail.

It is expected that the publication will be used most largely as a handbook of reference by seedsmen, canners and growers. With this in mind, detailed directions are presented for testing and comparing tomato varieties and stocks, and suggestions given as to how to make accurate comparisons and records. Preliminary to the detailed descriptions and illustrations, the outstanding characteristics of the principal varieties are presented in tabular form so that comparative differences can be recognized at a glance.

The descriptive text is comparatively brief, occupying but about 15 pages. The text includes not only descriptive and comparative terms for portraying the characteristics of each variety but actual figures are presented for defining what is meant by the comparative terms used. Many thousands of measurements and individual readings were made as a basis for the verbal and numerical descriptions presented. There are 31 full-page plates illustrating variations in plant habit, leaf character, fruit shape and structure. Three of the plates are in natural color illustrating the typical colors of leaves, fruit exteriors and fruit interiors, respectively. On account of the high cost of publication of this work, the bulletin is available for purchase only. It can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 35 cents per copy.

In this connection it should be said that Miscellaneous Publication No. 169, "Descriptions of Types of Principal American Varieties of Cabbages," and Miscellaneous Publication No. 170, "Descriptions of Types of Principal American Varieties of Peas," are both practically completed and should be off the press in the next few weeks. In style and make-up these two publications are quite similar to the one on tomatoes. The large amount of color work and the difficulty of obtaining faithful reproductions of the natural colors of the different varieties have resulted in some delay in the appearance of all these publications. The papers on cabbage and on peas each contain six full-page plates in color, as well as many half-tone illustrations.

Three years' field work has been completed in several States upon varieties of carrots, beets and spinach. Manuscripts on these three crops are now in course of preparation. The onion description and standardization work is now entering its second year and it is hoped that if all collaborators are favored with good seasons in 1934, the field work on that crop can be completed by this Fall.

Again at this time, the Division wishes to make public acknowledgement of the excellent spirit of cooperation in connection with these studies that has been shown by some two dozen State agricultural experiment stations collaborating with the program to date. Without their wholehearted support and able assistance, none of these problems could have been carried to successful completion.

FRUIT DISEASES

Leslie Pierce, Vincennes, Indiana

A fairly comprehensive survey of the damage caused by the low temperatures of February 27-28 was made during the week of March 1-15.

"In the Purdue-Vincennes peach orchard no live fruit buds could be found on Elberta, Early Elberta, Hale, Champion or Belle of Georgia. A few buds on South Haven, probably less than 1 percent, escaped death. The lowest temperature recorded in the P-V orchard was -11 degrees. In the Nesbit orchard, where a minimum of -18 was recorded, all of the South Haven buds were killed. With the exception of two orchards, one located seven miles east and the other eleven miles south of Vincennes, where a small percentage of the fruit buds survived the freeze, the destruction of the peach crop in this section was apparently complete.

"Since fully 50 percent of the peach trees in this section showed severe injury to the trunks, crotches and main limbs following the freeze that occurred in January, 1930, it was feared that considerable injury of this kind had been caused by the recent low temperatures. Considered as being fairly representative of the total peach acreage in the section, trees were examined in the Purdue-Vincennes orchard and in the J. W. Kimmell orchard. No evidence of frost injury could be found on any of the trees examined."

Paul W. Miller, Corvallis, Ore.

Referring to studies on the overwintering of the bacterial blight disease of filberts he comments, under date of February 24th: "Another fact of possible significance noted in this study was that most of the stem cankers present were located at the base of blighted shoots of 1933 growth.

"Judging by the small size of many of these dead shoots, it would appear that they had succumbed to infection by bacterial blight relatively early after growth had been initiated in the spring of 1933. While some cankers were found about pruning wounds they were not anywhere as near abundant as cankers about blighted shoots. Results of this survey suggest, therefore, that the use of a suitable spray to prevent current infections of buds and young shoots may help materially in the control of this disease. Such a spray program is now under way involving the use of Bordeaux 5-5-50 through the critical period for infection. One application of Bordeaux mixture has already been applied to approximately 150 filbert trees in a young planting which has just been set out near Forest Grove, Ore. It is planned to apply at least three additional spray applications to this plot during the course of the season to determine if spraying for the control of current blight infection will reduce losses from bacterial blight."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore. (continued)

Writing on March 12th he says: "Mild weather continues to prevail in the Pacific Northwest. During the latter part of the week unseasonably warm temperatures prevailed....In some early varieties of walnuts such as the El Monto, the catkins are beginning to elongate and pistillate flowers in the pre-bald prebloom and the bald prebloom stages of development, respectively, are visible. The buds on the Franquette variety of walnut are beginning to swell but no foliage or flowers is apparent as yet."

"In studies on the overwintering of the bacterial blight disease of filberts carried on during the past week," he wrote February 17th, "the filbert blight organism was recovered from dead buds in a large percentage of isolation attempts made. These studies indicate that dead (blighted) buds may constitute a very important source of primary inoculum for the bacterial blight disease of filberts."

"Mild weather continues to prevail. Peaches and plums are now in bloom. According to a study made by Dr. L. F. Henderson, Curator of the University of Oregon Herbarium, the spring season in western Oregon is at least two months advanced over average years. Dr. Henderson has collected a number of wild plants in bloom to add to the University Herbarium and has compared the dates with earliest dates of bloom recorded in the collection. While the recorded dates do not in all cases signify the earliest bloom, they at least indicate the average, he points out in a press release. The year 1926 comes the nearest to the present year, he states. A number of plants which ordinarily put out blooms in the spring have been blooming all winter. Hazel (Corylus rostrata Californica) bloomed this year January 31, while the herbarium records show March 19, in 1903, as the earliest previously collected. Pussy Willows (Salix scouleriana) this year were in bloom January 31, compared to the earliest record date of March 5, in 1926, in the herbarium. Oregon or Red Alder, in bloom this year January 31, compared to February 16, back in 1926."

DISCOURAGED FARMERS.

We thought we had seen every possible suggestion that could be made for the benefit of discouraged farmers, but it has remained for the NEWS LETTER to discover a new and striking solution for the problem. A farmer who had just delivered some vegetables to a State institution for the insane was awaiting his pay when one of the inmates approached him and started a conversation.

"Are you a farmer?" he asked. The farmer admitted that he tried to be.

"I used to be a farmer myself," said the inmate. "Did you ever try being crazy?"

The farmer admitted that he had not.

"You ought to try it," urged the inmate, "it's got farming beat all hollow."

FRUIT DISEASES

G. A. Meckstroth, Chadbourn, N. C.

Writing on February 14th, he reported: "We have had unusually cold weather here recently. On January 30, the mercury dropped to 8 above zero, and on January 31 it registered 5-1/2 degrees. This was a seventeen-year record for this section. February 10th a minimum of 9 degrees above zero was recorded.

"It is impossible to say at this time what effect this cold will have on this year's strawberry crop. Some growers feel that the plants have been injured severely while others believe that they will be benefited by a period of almost complete dormancy. We have noticed a few blossoms scattered through the fields for some weeks, and a good many buds had swelled and were getting ready to open. This cold has killed all the buds, even the very smallest ones which would ordinarily escape a cold of less intensity. A few plants have been killed, but this loss is not heavy. In the case of many plants, most of the mature leaves have been killed or severely injured, leaving only a few living young leaves in the center surrounding the crown. In the Klondike variety the leaves have taken on a dark olive-green color while in the Blakemore variety they have a brown color. In many plants of both varieties practically all the leaves except a few small ones have been killed.

"All the winter vegetables that are grown in the section for greens, such as cabbage, collards, mustard, kale and spinach, have been killed, and these are now being hauled in here from lower South Carolina. I believe that all the oats has been killed, and that rye has been severely damaged...."

H. F. Bergman, Amherst, Mass.

"For the last few days we have had some mild weather for the first time since early in January," he writes March 3d. "February was the coldest in the history of the weather records, i.e., since 1837, for this region, with unusually heavy snowfall. We had the first rain of the year last night. The mild weather and rain is making the snow melt rapidly."

John C. Dunegan writes from Fayetteville, Ark. that the Research and Statistics division of the C. W. A. has started a survey of the number of people dependent upon the apple, grape and strawberry industries in five counties in northwest Arkansas.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Storing Many potato growers prefer to cut their seed potatoes in ad-
Cut Seed vance of planting time. In so doing they can utilize their
Potatoes. labor to better economic advantage by cutting their seed dur-
ing inclement weather or when other work is slack and then devote all their energy to planting when conditions are favorable. Technical Bulletin No. 394, just issued, and prepared by R. C. Wright, W. M. Peacock, and T. M. Whiteman, discussed this matter under the title "Effect on Subsequent Yields of Storing Cut Seed Potatoes at Different Temperatures and Humidities."

The authors undertook to determine the best method to handle and store cut seed pieces, being prompted by numerous reports of loss due to improper methods, such as storing in unwashed fertilizer bags, storing in large bulk, cutting in direct sunlight, drying off the seed pieces after cutting, storing at too low a temperature, etc.

The work was done at Arlington Farm, Virginia, and under these conditions it was found that when seed pieces were cut and stored in baskets or barrels at a temperature of 60 degrees F., with a relative humidity of around 85 to 90 percent for about 10 days, the healing of the wounded surfaces was practically complete so that when planted the subsequent yield was in most cases as good and in some instances better than from potatoes cut just before planting.

When cut seed was stored at lower temperatures or lower humidities, the healing or suberization* of the cut surfaces was inhibited and the seed were more subject to decay.

Detailed directions for care and handling are given for the benefit of those who wish to cut their seed potatoes in advance of planting time.

W. T. Pentzer, Fresno, Calif.

"Some time has been found to inspect storage lots of Emperor, Chanez and Ribier grapes Mr. Asbury put up last fall," he wrote on March 8. "The addition of sodium sulfite to the sawdust again gave very good mold control. Perhaps the most promising method of applying the sulfite in non-sawdust packs was by mixing it with a small quantity of sawdust and sifting it through the bunches of grapes after the lug was packed. This method of applying the sulfite distributed it throughout the lug in small concentrations, and for the most part resulted in good mold control without injuring the fruit....An inspection of frozen fruits was made the past week. Youngberries in 50 percent syrup, in our estimation, was the best product frozen. However, nectarines, apricots and Mascat grapes were fairly good."

*NOTE:--It's all right. The Fiscal Regulations permit the use of one \$6.00 word like "suberization" in each issue! Ed.

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"There has always been considerable doubt as to the suitability to fruit growing of certain areas up towards the Columbia Gorge," he writes. "It has been felt that filberts would be more resistant or more satisfactory than other fruits. The yield records and the observations of growers show that in a belt affected by the wind the crops have been almost totally or greatly reduced. Going a little farther north across the Columbia we find the same condition, with the added possibility of heavy damage to the trees themselves. We found one area where one grower lost 200 mature trees last year. This was in part connected with "wet foot" but apparently greatly aggravated by the sudden drops in temperature that this territory receives. As we trace this out in our survey work, we find it explaining some minor troubles that have been reported in the past."

On March 3rd he had written: "Early varieties of walnuts have the buds well opened. The Franquette is beginning to shed the bud scales."

"The month of February was short about 4-1/2 inches of normal rainfall, with a temperature considerably above the average. According to the weather reports this has been a record for a warm winter of December, January and February. In taking soil samples, the top foot is fairly wet due to light rains. The soil layers underneath in many cases are just slightly too wet to sift."

C. F. Kinman, Sacramento, Calif.

"Yesterday at Placerville I found a very heavy bloom nearly ready to open on Bartlett pear trees, and the day before in the Yuba City district saw what was, I think, the heaviest and most thrifty bloom I have ever seen on cherries, domestic plums and peaches," he writes on March 15. "The Japanese plum blossoming period is past. With a good soil moisture condition and the favorable weather that has prevailed, conditions seem ideal for a heavy fruit crop."

Elmer Snyder, Fresno, Calif.

"Grape cuttings and rootings were mailed out during the period to experiment stations and private individuals for trial. Practically all of the varieties of vinifera and resistant stock distributed were of varieties which were only obtainable in our own experiment vineyards. Experimental material was sent to the following State Experiment Stations: California, Georgia, Oregon and Texas."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

"Pruning operations in the Wenatchee Valley are practically completed," he reports under date of March 6th.

"The weather man has been especially kind to the growers insofar as spring field work is concerned. The dormant sprays should be on, but the growers were held up because of lack of irrigation water. Many of the main irrigation ditches were filled up with debris from the heavy rains of last fall and considerable repair was necessary before water could be turned into them.

"Buds are swelling rapidly, although not so rapidly that we contemplate damage from frost. Our days have been warm and bright, but the nights remain cool, with mean temperatures of about 30°. From past records in the valley and from the development of fruit buds and also other vegetation, we estimate full bloom this year to be around the 20th to 23d of April."

Atherton C. Gossard, Spring Hill, Ala.

Writing from the U. S. Pecan Field Station on February 17th, he says: "The data on the growth rate experiment was completed this week. They corroborated very closely those obtained in 1931 and 1932. The long 1932 shoots produced the long shoots of 1933. The blossoming 1933 shoots were produced from the long, rapidly growing 1932 shoots. The 1933 shoots which produced several blossoms had a higher growth rate than did those which produced only one or two.

"The same is true in regard to maturing of nuts. The shoots which matured a given number of nuts had a higher growth rate and greater total growth than those which merely set the same number of blossoms. More nuts were dropped before maturity from the short weak fruiting shoots than from the longer and more rapidly growing ones.

HORTICULTURAL FIELD STATION

A. C. Hildreth, Cheyenne, Wyo.

The report of the Horticultural Field Station at Cheyenne for the week ending March 8th, says: "Breeding work continued in the greenhouse, with apple trees and bush fruits, vine crops and tomatoes.

"Planting of tomato seed in flats is well under way, and potted conifers have been transferred from the greenhouse to cold frames."

April 2, 1934

CROP PHYSIOLOGY AND BREEDING INVESTIGATIONS.

New Crops for the American Sahara. "To most people the word Sahara brings to mind a sandy desert waste, difficult if not dangerous to traverse because of the scarcity of water, and rendered doubly dangerous by blinding sand storms caused by hot, dry winds," said Dr. Walter T. Swingle in a radio talk presented on March 7, 1934 at 4:30 p.m. under the auspices of Science Service, over the Columbia Broadcasting System, at Washington, D. C.

"However, all travelers agree that, wherever water is available in Saharan regions, there are found oases that show luxuriant vegetation, abundant production and picturesque beauty. More and more is being heard about these attractive features of desert life.

"Few people realize that in the United States we have large areas which have climates that are extremely similar to those found in some of the best known parts of the Sahara desert and that in these sections of our country are to be found, as well, some of the most productive areas of the United States, regions which, thanks to irrigation, rival if they do not excel the finest oases of the Sahara itself in beauty, charm and in the bountiful production of human food.

"Few understand that no other populous, highly organized, temperate zone country includes within its borders such large areas with typical Saharan climates through which are scattered, wherever water is available, magnificent productive oases. Old World countries such as France, England, Spain and Italy possess, it is true, colonies which have Saharan climates, but none of these countries have within their own borders Saharan climates such as are found in the United States.

"The North European settlers who live in these distant Saharan colonies, with few exceptions, move out to cooler regions as the torrid heat of summer comes on, and the few who remain behind, in lonely isolation, to hold vital posts, do not have the proper attitude of mind to conduct scientific work or even to study critically and improve cultural practices. The natives of such Saharan oases who do live there the hear around are not qualified by disposition nor by training to question the time-honored practices of their forefathers, much less to make any scientific observations.

"In no part of the world other than the United States do North Europeans reside the year around in large numbers in these Saharan climates. There are doubtless many more residents of North European ancestry in the hot valleys of Arizona and California than in all the rest of the Saharan climatic regions of the world put together.

CROP PHYSIOLOGY AND BREEDING INVESTIGATIONS

"Many of these residents of the oases of our Southwestern States are expert plantmen or skilled engineers, and some of them are high-school, college or university graduates. Thanks to this unusual situation, the study of desert crops and their culture in this country has made remarkable progress in recent years.

"The culture of the date palm, one of the most characteristic and most beautiful of the crop plants of the Old World oases, was undertaken early in this century as a definitely planned study to determine the possibility of introducing into the United States the crops of the Old World Saharan oases. This program was initiated by importing a large collection of the best date varieties of the Old World and planting them in several testing gardens in Arizona and California in cooperation with the State agricultural experiment stations. Since then the date palm has been studied in the United States as nowhere else in the world.

"Repeated trips to the date regions of the Old World, made by date experts under the auspices of the Division of Plant Explorations and Introduction of the United States Department of Agriculture and by private nurserymen, resulted in bringing into this country the best date varieties of all the leading date-growing regions of the Old World. Each such region, of course, has its own varieties but no other country other than the United States has such a complete collection of the choice varieties of all countries, including well over 100 varieties from the oases of Northern Africa, Egypt, Arabia, Mesopotamia, Persia and Baluchistan, which are now being tested in the experimental date gardens in California, Arizona and Texas. Date culture has already become a promising new industry in California and Arizona and some of the date gardens in these States are probably the best managed and give the highest yields of any in the entire world. The American public is coming to appreciate the delicious home-grown dates that are packed for the consumer, in an extremely clean and attractive way, practically fresh as picked directly from the trees.

"The date palm cannot be grown successfully except in a Saharan climate. There is an Arab proverb which states that the date palm must have its head in the burning fires of the sky and its feet in running water. In the rich soils of Southeastern California and Southern Arizona, the date palm grows with extreme rapidity and comes promptly into bearing. No other commonly grown crop yields any such quantity of human food as the date palm and the fruits are of such choice flavor and of such attractive appearance that they are almost to be classed as confectionery rather than as ordinary food. Besides, the exceptionally high and well balanced mineral content of dates seem to render them an exceedingly healthful food--even for children and invalids. At the present time about four or five million pounds of dates are produced each year in the Southwestern States, while about forty to fifty million pounds are imported into this country from the date-growing lands of the Old World.

CROP PHYSIOLOGY AND BREEDING INVESTIGATIONS

"As would be expected, American date growers and their technical advisers have made one discovery after another concerning date cultivation and production until it is no exaggeration to say that more progress has been made in improving date culture in the United States during the past 20 years than has been made by Old World date growers in the past twenty centuries. New methods of planting and of transplanting date palms; new methods of pruning them and of thinning the crop; new methods of picking, curing, sterilizing, packing and storing the fruit, have not only been discovered but have been put into practice by intelligent American date growers. In the field of pollination of the flowers in particular, new and spectacular discoveries have been made.

"People not familiar with the date palm may not realize that the pollen is produced on male palms which yield no fruit. In remote antiquity, some five or six thousand years ago, the Sumerians in Mesopotamia discovered how to pollinate the female date palm by tying a short spray of male flowers in each flower cluster of the fruiting palms. Only two or three male palms are needed for 100 fruiting palms and today all date growers practice this system of artificial pollination....The discovery about pollination which has come as a surprise is that the pollen from different male palms exerts a very definite influence upon the time of ripening of the fruit.

"In some parts of the Southwest the summers are so hot that most date varieties ripen too early and tend to shrivel in the burning heat of late summer. In other regions the summer heat is not adequate to ripen all the crop before rainy, cool weather begins in autumn, with the result that often a large fraction of the crop may hang on the palms in an immature condition far into the winter, with heavy losses from rain which is very detrimental to the ripening of the fruit. By using the pollen from selected male palms it has been found possible to control ripening in an exceedingly satisfactory way....

"There are thousands of beautiful date palms growing in the vicinity of Palm Springs, Calif., and Phoenix, Ariz., two of the most famous and most beautiful desert resorts in America, and these have attracted the enthusiastic admiration of great numbers of winter visitors. It is no exaggeration to say that the date palm has contributed more than any other cultivated crop to the beautification of the landscape; and furthermore, date gardens lend a characteristic desert atmosphere nothing else gives.

"The skilled Arab cultivators of the Old World plant under the half-shade east of the feathery foliage of the date palm choice fruit trees of all kinds, which thrive to perfection--and underneath the deeper shade of these fruit trees, flowers and vegetable crops, thus making the land support three tiers of crops! Our own date growers are finding that oranges, grapefruit and other Citrus fruits thrive unusually well under the shifting half-shade of the date palm. Soon we may expect to see luxurious gardens under our own lofty date palms, rivalling or excelling those of the famous oases of the Old World."

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"The almond blooming season appears to be a little later than usual in most districts," he writes on March 10. "The bloom came on with a rush, early and varieties blooming quite close together. Pollination work on the almond was somewhat limited this year because we already have enough nursery trees on hand from last Year's crosses to fill all the space available. Such pollination work as was done to determine sterility and inter-fertility of new almond varieties had to be done in a very few days. So far there has been no frost and at the present time it looks as if the almond pollination work will be quite successful."

He had written on February 24th: "Practically the entire time for the past two weeks has been used in field work. The distribution of trees 8-31 and 8-32 (originated in our breeding experiments) for further trial among growers in the different almond growing sections of California has occupied much of the time. The balance of the time has been used in obtaining almond blooming data and in the almond pollination work."

VEGETABLE PRODUCTION

James H. Beattie has prepared a revised edition of Farmers' Bulletin No. 1318, "Greenhouse Construction and Heating," which is now ready for distribution. The bulletin meets a real need as glass farming or the growing of flowers and vegetables in greenhouses, has become an important industry in this country. The bulletin describes the construction and heating of greenhouses, and gives other information likely to be useful to any one who is engaged, in, or proposes to engage in glass farming.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The Wenatchee Fieldmen's Association met Saturday and discussed spray programs for 1934," he writes on March 12. "Lime-sulphur was enthusiastically supported for dormant spray. Arsenic of lead, 3# per 100 gallons in calyx and first brood cover sprays (four) and 2# per 100 gallons in second brood sprays seemed to meet with unanimous approval. "One pint of nicotine sulphate was to be added to the lime and sulphur in the pink spray for aphids. "Fish oil is most popular in Wenatchee for a sticker-spreader. In heavy infestations, 1 per cent mineral oil is recommended at the peak of flight in the first brood. On account of possible injury, caution was stressed in using oils for 30 days after the dormant spray of lime-sulphur."

ADMINISTRATIVE NOTES.

Identification of Vouchers. The whole point of the matter, of course, is that you can identify yourself, tell who and what you are, in case the question arises--but a voucher cannot! Mr. Ryerson is passing along to heads of Divisions a letter from the Disbursing Clerk of the Department:

"During recent months an increasing volume of correspondence has been exchanged between this office and the various oil companies of the country with respect to the identification of proper accounts on the books of these companies to which remittances from this office should be applied," writes the Disbursing Clerk. "In many instances the oil companies submit extra copies of their invoices with vouchers and request that such copies be returned with the remittance. However, the efforts of the payees in this respect have apparently failed to accomplish the desired results, either because the extra copies do not accompany the vouchers when submitted to this office for payment or because they are attached to the vouchers in such a manner that the mailing clerk of this Division fails to recognize them as enclosures to be returned to the payees."

"With a view to the elimination of this unnecessary correspondence, your cooperation is solicited to the end that where extra copies of invoices are available, they be securely attached (not merely clipped) to the mailing coupon and forwarded to this office with the voucher. If extra copies of the invoices are not available, and there is insufficient space on the mailing coupon to indicate the invoice numbers, dates, and amounts thereof, a list including that information should be securely attached to the mailing coupon."

"Considerable correspondence of the same character is also required with respect to vouchers covering other purchases and it is believed that most of this correspondence could be eliminated if, in addition to the name and address of the payee on the mailing coupon, a description of the purchases were shown, particularly a reference to the payee's invoice or account numbers, if any are available."

Mr. Ryerson wishes us to give the Disbursing Office our full cooperation in this matter--and a compliance with the suggestions outlined will not hurt the feelings of our own accounting office, either. Please be careful to send with each Form 1034 voucher a mailing coupon, giving the desired information. (The mailing coupon is the Form 8-7319 slip which is used to show address to which check is to be mailed, date, character of item, etc. If you are running low on these, Mr. Swartz will send more on request.)

Report of Shipments Instructions have been received from the Department's Traffic Manager that it will no longer be necessary to submit Standard Form No. 9, Report of Shipments, to cover tonnage shipments of freight.

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April 2, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and other represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., April 16, 1934

No. 8 No. 8

Bettering the Gold Standard

Writing of the 61st anniversary of the planting of the parent Navel orange tree in California, to be celebrated at Riverside on May 4, A. D. Shamel says: "Our interest in the celebration lies in the fact that it illustrates graphically the outstanding service of the United States Department of Agriculture through the introduction of the Washington Navel orange and the scientific work that has accompanied the development of this unique variety.

"I do not know of any other single service that has such an effective educational appeal as this one has, and the celebration is based upon this colorful and important service. Over \$175,000,000 have been returned to California Navel orange growers for their crops since the trees of this variety began to bear fruit. Furthermore, the citrus industry of the Southwest is based upon the success of the Navel orange and during the period from 1895 to 1933, inclusive, the f.o.b. value of the California Citrus crop has been \$1,870,822,195.65.

"In comparison, the value of gold mined in California for the period from 1848 to 1932, inclusive, has been \$1,864,236,082.20. In other words, the cash value of the Citrus crops since 1895 has been greater than that of the gold crop from 1848 to 1923; and at the present time the annual value of the California citrus crop is about \$100,000,000, while that of the gold crop is only about \$10,000,000.

"There are many other economic and social advantages from Citrus growing as compared with gold mining that I will not attempt to mention."

FRUIT AND NUT PRODUCTION

A. D. Shamel (continued)

On March 19th he wrote: "We found last week a very interesting branch sport in an otherwise apparently normal Washington orange tree, the first of its kind that I have observed. The branch bore 14 uniform fruits and is located in the parent tree about 6 feet from the ground, rather high up on one of the secondary main limbs. The tree is located in the William Cooper grove on Massachusetts Avenue, Riverside, and is about 30 years of age.

"The characteristics of the fruit on the mutant branch that distinguish them from the normal include, absence of a navel, absence of seeds, yellow color of rind with relatively few oil cells, rather flattened shape of fruit very tender rag of small amount and late maturity. The reason that this branch was noticed by Mr. Cooper was that it was left by the pickers, and the peculiar color and shape of the oranges. He did not notice the most important characteristics, absence of navels and absence of seeds in the fruits. He called at our office in response to a request in our local paper that any limb sports observed be reported to us, and this instance emphasizes the value of such requests. Several times during the past few years growers have called to our attention striking bud sports, by reason of our requests in Farmers' bulletins or other publications for such information.

"I am of the opinion that the Cooper Navel orange sport is a reversion to the Selecta orange, the parent variety, we think from which the Washington Navel orange originated through bud mutation. The fruits of the sport resemble some of those that I saw in Selecta orchards near Rio de Janeiro in 1913, and the fruits of the Selecta trees in the Citrus Experiment Station orchard there. It has several characteristics that indicate that it is a reversion to a more primitive form than the Navel orange, including smaller size and later maturity of fruit, more yellowish color of rind, and inferior flavor of the juice.

Geo. P. Hoffmann, Meridian, Miss.

"Our cover crop of Austrian winter peas and vetch is rapidly forming a complete carpet between the trees, is attracting the attention of many visitors to the Farm on week days and Sundays, and the value of this method of land-building is rapidly gaining ground. It is interesting to observe that land which wasted away through erosion one year ago is now 'taking up' the water, as a result of the summer crop of 7.35 tons per acre turned under and the winter crop now growing. Further, it is very interesting to observe that a plot seeded to vetch alone at the rate of 30 pounds per acre, has formed a complete ground-coverage.

FRUIT AND NUT PRODUCTION

Geo. P. Hoffman, Meridian, Miss. (Continued)

"Observations on one season's work would seem to indicate at this time, about six weeks before the winter cover crop should be turned, that a heavier seeding than is normally used (15 pounds each of peas and vetch) might be used to good advantage on the less fertile land planted to groves in which early or April turning of the winter crop is necessitated because of the planting of Crotalaria as a summer crop."

C. E. Schuster, Corvallis, Ore.

"This week has been largely concerned with pollination work on walnuts," he writes March 24th. "Some of the earlier varieties have been in full bloom. The later varieties have not yet begun to open up to any extent....The weather has been very warm, with no rain. Prunes and cherries are in full bloom, with prunes past full bloom in some sections. Everything else is advanced in the same way. Aphis on all types of plant material are becoming very abundant."

On March 17th he had written: "This week has seen the first of our walnut pollination work, as we did our first early pollination on the early varieties."

"We have been checking various types of cover crops in orchards on varying orchard soils. There has been a pronounced variation between the adaptability of certain crops on soils. So far, a strain of Crimson clover has shown exceptional adaptability to the hill soils where it has been very difficult to get good cover crops of other types."

"The season has been warm and dry. Prunes are coming into full bloom. Other early fruits are in full bloom or past. Apples are in the pink and sometimes a little farther advanced. On the whole, the country on this date has never looked better in my experience. Field crops are well developed. Orchard trees have good growth from last season with splendid bud formation. However, there was a light frost this morning, and prospects are for more frost. Apparently no damage has been done yet."

Hood River Conditions.-- "An assistant pruning across fertilizer plates this week," says the report of March 17, "remarked, after pruning across the check plot, that we could have omitted that plot because there was no growth and so little dead wood it wouldn't have hurt to miss it. It was true. The last plot to be pruned was the straight nitrogen and when he found himself on a tree nearly dead but showing good terminal growth he asked what had been given that tree. The lack of growth on unfertilized trees was very striking. All other plots appeared pretty much alike N, two PK plots, two NPK plots."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"Pecan growers are continuing pruning in their orchards," he reported under date of March 17th.

"Many growers got started late and they will not get as much done as they expected. There has been more pruning done this year than I have ever seen before. Well-informed men report that there has been more pruning of pecan trees practiced this winter than there has been in all of the years of the pecan industry put together."

On March 10th he wrote: "Pictures were taken of the trees in the rosette control experiment in the Bennett-Cox orchards before the dead wood was cut out. The zinc-treated trees have made remarkable recovery from this disease, as very little or no die-back of the trees has occurred even on trees which received comparatively small amounts of zinc. The check trees have recovered to some extent. Apparently the trees in this orchard are now recovering from the deep cultivations which they received about four years ago."

Milo N. Wood, Sacramento, Calif.

"During the two-week period ending March 24th," he writes, "the almond pollination work was finished, and the blooming data completed."

"The blooming period was much shorter this year than usual, and the varieties bloomed closer together than normally. The weather has been favorable for pollination and from that standpoint alone good crops may be expected."

PERSIAN WALNUT POLLINATION

"Pollination and Blooming Habits of the Persian Walnut in California," has been issued as Technical Bulletin No. 387, in the Department's series--a comprehensive study in 56 pages, with 18 figures. It is, of course, by Milo N. Wood, and it is pleasing to see the results of his work in this field in type at last.

Most of the Persian ("English") walnuts produced commercially in this country are grown on the Pacific coast, and since California alone produces about 95 per cent of the crop, these pollination studies mean much to growers in that State. In the absence of scientific data there has been great diversity in the opinions and practices of orchardists. In an effort to solve the problem of the exact relation of pollination to crop production, experiments were begun on a small scale as far back as 1920, and this bulletin reports some of the significant findings in connection with the work.

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Full bloom of Anjou began about March 17th," he reported on March 26th, "and full bloom of Bartlett about March 19th. Most of the week was warm and sunny--optimum conditions for pollination. Of the bees working the orchards, most of them were on weed blooms."

On March 19th he wrote: "On March 12, most pear blossom buds had reached the stage of 'bud separation in the cluster.'"

"The weather all week continued warm, so that five days later most trees were in full bloom. Comparison of the 1934 bloom development with my photographs of the 1933 blossom buds at weekly intervals shows the 1934 bloom to be four weeks ahead of last year, and about two weeks ahead of normal. The Bartlett variety is as far advanced as Bartletts in the Sacramento River District, California's earliest district."

C. P. Harley, Wenatchee, Wash.

"We made our first application of sodium nitrate on our D'Anjou cork spot plots yesterday," he writes under date of March 13th.

"In addition to studying the effects of nitrogen on cork spot development, we are again comparing the effects of heavy and light pruning. Some new and rather interesting information was obtained in regard to these Anjou trees at Malaga. It appears that when these trees were planted, barnyard manure was applied around the young trees. From our laboratory experiments we have found that young sunflower seedlings develop very poor root systems when germinated in a high nitrogen medium. This was true with both nitrate of soda and sulphate of ammonia. We are wondering if these young trees were not affected in a similar way when they were set out."

C. L. Smith, Austin, Tex.

Report for the 19-24 of March period states: "Smith spent most of this weeks at Brownwood in measuring and pruning the pecan trees on the station. The extent of the two severe freezes of February and April, 1933, is just now showing up. I predict that these two freezes will set back the trees as a whole at least a year."

"The late freeze killed or injured the apical shoots which caused many buds lower down to be forced out. This caused a growth of many shoots, most of which wereweak, rather than a few vigorous shoots. Thus the pruning was mush more difficult than it would have been under normal conditions. The trees of the Burkett variety were damaged much more than trees of the Success, but the damage was later in showing up than on Burketts. The City has completed blasting at the old sewage dispesal plant, and have removed the preater part of the debris from the station."

FRUIT AND NUT PRODUCTION

W. R. Barger, Indio, Calif.

"March came in like a lion--a mad one, if madness and high temperature are synonymous--for we have had over two weeks of hot days and warm night," he writes under date of March 19th. "The winter has been very mild but cool enough to check plant growth and during this hot spell plants have nearly jumped out of the ground."

"Sweet corn is eight inches high; onions, tomatoes and asparagus are nearly ready to harvest. Grape shoots are a foot long and in flower, and grape fruit and tangerines are nearly through blooming. The strawberry season, and sand storm season, arrived too. There has never been a failure of the wind-blown sand crop."

"Our official day temperature has been around 95, and any official curious enough to lean against an exposed south wall would find it 110, and he would be standing on 120 degree sand--such is our spring, altho I believe the last of last March we had a killing frost."

"A few dates were pollinated the last of February, but in the last two weeks probably over half of the spathes for the season opened up. My guess is that there are as many fruit bunches pollinated at this time as there were the entire season last year. Most ranchers have had to be more careful than usual in order to make the available pollen go around."

TRUCK CROP DISEASES

W. D. Moore, Charleston, S. C.

"Precipitation for March to date has been .93 inch as against a normal for the month of 2.73 inches," he reports March 24th. "The accumulated deficiency for 1934 to date is well over two inches. Temperatures have remained subnormal for the greater portion of the month, resulting in very slow germination of seed and practically no growth of the few crops that survived the February freezes. Only a few fields have potato plants above ground, whereas on the corresponding date a year ago, all fields showed good stands. Prospects for a spring cabbage crop are now poorer than two weeks ago. Conservative estimates now place this crop at not more than 25 per cent of normal, with the quality being very poor. We have had heavy frosts and freezing to the coast as late as the 21st. In all probability this has damaged beans to a marked degree in the interior and in some instances in the main trucking section of this area."

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"The peach buds in the orchards in the vicinity of Springdale have continued to survive the varying weather conditions and the growers feel that they still have a prospect for a crop," he writes March 31.

"One grower at Springdale estimates that barring further losses from freezes, there is prospect of 100 cars of peaches in the vicinity of Springdale. Apple buds are starting to swell but they are developing very slowly and it will be at least two weeks before the trees will be ready for the first spray applications."

Writing on March 24th he had reported: "I devoted considerable time on Monday to the examination of peach buds from an 8-year-old Elberta orchard at Springdale. In all I examined 371 buds from this orchard and found that 40 percent of the buds were dead. I also visited a number of growers in the Springdale area and the concensus of opinion was that while the low temperature had killed a portion of the crop, the prospects were still good for a peach crop...."

"The week ends with a layer of ice on all trees and shrubs as the result of another drop in temperature during the night of March 23d. The storms of the past week have been accompanied by thunder and lightning. They sound like spring showers, but have the effect of winter storms. This new ice storm will probably eliminate additional peach buds."

He had also written earlier, March 17th: "I visited several peach and apple growers at Springdale on March 13th, and they were all hoping that spring weather would continue as the prospects are excellent for a peach crop this year. The sleet storm and accompanying low temperature as the week ends may eliminate or reduce the peach crop prospects. Apple buds are still entirely dormant...."

"According to the local newspaper the strawberry growers in the Ozarks shipped over half a million crates throughout the country last season, and predict an increase of 80,000 crates this year. More than 50 percent of the present crop to be harvested are new first-year beds. Fields were in good condition and pickers as well as producers anticipate a minor 'boom' in the Ozark region."

Humor or Wisdom? The newspapers report that a man called at a seed store and asked gravely for 4 packets of a certain seed: "One for Mrs. Smith's cat," he explained, "one packet for Mr. Smither's dog, one for the birds--and the other for my wife."

FRUIT DISEASES

Lee M. Hutchins, Fort Valley, Ga.

"An unusually cool March retarded the development of peach buds," he writes on March 31, "and our blooming season is later than was to be expected. Today, March 31, Hileys are just passing beautiful full bloom; petals are just beginning to fall; the trees are still a gorgeous pink; young leaves are in all stages all the way from green points to leaf blades three-fourths of an inch long. Belles (Belle of Georgia) and Elbertas are coming into full bloom, with about 50 percent of the buds full open. Early Rose is slower than most varieties, with from 1 to 5 percent of the flower buds full open.

"In the principal peach-growing districts of Georgia, from Cornelia to Albany, crop prospects for 1934 were not appreciably reduced by the sharp freezes of February and March. In general, there is an excellent crop of buds, and it is estimated that the State as a whole may produce a commercial crop of approximately 12,000 cars. With normal consumption of peaches, a Georgia crop of this size should not glut the markets, especially in a year like the present, in which exceedingly light production is expected from the northeastern section of the country."

Paul W. Miller, Corvallis, Ore.

"The weather during the past week has been characterized by continued mild weather," he writes on March 17. "Pistillate flowers of early seedling Persian walnuts and of certain early varieties like the El Monte are visible on the new growth but they are not as yet in bloom. The blooming period of these early varieties will probably be approximately a month earlier this year than last. The buds on the Franquette variety of walnuts are beginning to swell slightly but no foliage or flowers are apparent as yet."

M. A. Smith, Ozark Fruit Disease Laboratory

"In a report just received from Cape Girardeau, Mo., we learn that some of the peach varieties have come through the winter in good condition," he writes on March 24th. "Mr. M. E. Leming of Cape Girardeau writes that his Elbertas appear to have the best crop of live buds of any of his varieties. Peaches were expected to be in bloom in that section by April 1, but the cold wave which was experienced throughout the State this week will, of course, cause a delay in blooming."

H. F. Bergman writes from the Cranberry Disease Field Laboratory at Amherst, Mass. on March 24th that "Many of the blueberry plantings on the Cape show quite severe winter killing and flower bud killing, especially the younger plants."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"The past two weeks have been spent in attending meetings of the Pacific States Cold Storage Warehousemen's Association at Del Monte, and the Canner's League cutting of frozen fruits and vegetables at San Francisco, and contacting various agencies interested in our work," he writes on March 31st.

"The cold storage meeting was devoted primarily to a consideration of the industry's economic problems. There was interest expressed in learning more about humidity and humidity control in the storage of fruits and vegetables. The cutting of frozen samples of fruits and vegetables from the Fresno and Seattle laboratories was well attended by canners and interested parties. Favorable comment was made on the peas, corn on the cob, beans, olives, and cherries from the Seattle station, while our youngberries, nectarines, Muscat grapes, Mission figs and one highly flavored apricot cross of Mr. Wight's were favorably received. It was not difficult to tell the most promising products, for the fruit in these pans soon disappeared.

"Following the above meetings, a conference was held at Davis with Dr. Jones and Mr. Perry of the University of Calif. on handling and shipping tests with asparagus which we will conduct cooperatively this season. Reports so far indicate asparagus has been arriving in good condition and we are waiting for warmer weather before beginning the tests. With the widespread practice of precooling the asparagus in the cars before shipping and the increased efficiency in the operation of the car precoolers, less trouble can be expected in shipping this perishable commodity. Some of the agencies engaged in precooling with car precoolers held to the old idea that fruits and vegetables should not be cooled too quickly, and consequently were satisfied with an air blast temperature of 36 or 38 degrees, instead of 32 degrees or slightly lower, which of course brings about a faster and better job of precooling.

"At Watsonville we visited a vegetable shipping concern which has been engaged in the off-season in packing frozen fruits and vegetables. It had packed this season string beans, cauliflower, Italian broccoli, spinach, and Imperial prunes, and is now packing rhubarb. The containers used have been a patented paper affair, fitted with perforated submergers or suppressors, and were mostly of gallon size, adapted for institutional trade. While in Watsonville we saw a locally made apple washer which has been very satisfactory in this district. The washer is known as the Secondi washer and sells for about \$500 for a washer of 2000-box capacity, with no drier. The apples are rubbed with mops while floating in the wash section, a considerable scrubbing action being obtained in this way. The fruit is removed from the wash section by a clever fork-like arrangement which lifts the apples up an incline into the rinse tank."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"We have been cleaning up various inspections in the cold storage, mostly in connection with past washing treatments," he reports on March 31st. "The information on washing injury secured during the season is being condensed for dissemination to the industry before next season's harvesting operations."

"Some time has been devoted to tracing the washing treatments of fruit covered by the records taken from inspection certificates of the Bureau of Agricultural Economics. Apparently most of those packers who were painstaking enough to keep washing records had so small an amount of injury as not to be included in the Bureau of Agricultural Economics' records. It has been very difficult to secure any worthwhile information from this study. Mr. Reeves has been approached on the subject of a joint project on washing injury. He is doubtful about funds and time allowing him to work on such a project. Since the last work was done on the fundamentals of washing injury, fluorine has come into the picture and sodium silicate has reached a major position as a fruit wash."

"The week started out cool but cloudy and skies remained more or less overcast for the entire week. Cherries have been in bloom and the weather has not been favorable for the work of bees. Frost killed enough cherries to give the crop a good thinning. Pears are now in bloom and in the Rock Island section Stayman apples are full pink."

On March 24th he wrote: "The behavior of our Golden Delicious lots is quite in contrast with commercial lots from the same orchard. They are keeping splendidly without scald or breakdown. The fine aromatic flavor noticeable in earlier withdrawals of Golden Delicious lots picked late in the season is growing less pronounced, although still having a flavor more full than lots picked early...."

"The meetings of the Agricultural Council of the Pacific Northwest Advisory Board of the American Railway Association were attended in Tacoma on March 22nd. The problem of handling pears still bothers some operators. This largely involves the condition of the fruit upon delivery to the ocean carriers, and represents a problem never to be solved in its entirety...."

He had written on March 17th: "Water was turned in the High Line Ditch March 14th. A great deal of dormant spraying is being done during current days. There is a big swing towards the use of lime-sulphur for this treatment in this district."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Periodic inspections of test storage lots of Delicious were made. It is observable that most lots of Delicious, although having splendid texture, and in every other respect being in prime condition, have lost flavor from the time of the last inspection, January 26th to February 1st. This is a change from a 'full' to a 'mild' flavor, or from a 'mild' to a 'neutral' flavor. Only lots from the second or third pickings which were delayed in the orchard for a week before being placed in cold storage give other evidence of advanced ripening."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Superfluous shoots, known as suckers but really water sprouts, were removed from all plots," he reported on March 31st.

"Photographic records were taken before and after the operation. Some of the earlier grape varieties to start growth have made three to four feet growth at this time, namely Black Monukka and Sultanina, and necessitated tying to prevent breaking off by wind....

"Leaf hoppers are the main subject of discussion at this time. They are numerous in many vineyards, causing damage in some places, and necessitating active control measures in all vineyards to prevent serious damage from the later generations."

Writing March 17th he said: "Approximately 14,000 resistant stock cuttings were planted in nursery row. Cuttings were spaced approximately three inches apart in the row, with rows four and one-half feet apart. The less important stocks were planted in numbers from 25 to 100 cuttings each, while the more important were planted in larger numbers to furnish rooted vines for future plantings. In all, sixty different stocks were planted.

"In the planting operation, the subsoiler was set at 12 inches in depth and drawn through the row with a tractor. The cuttings, 16 inches in length, were pushed down in the subsoiler mark, and water turned down the row to settle the cuttings in place. The soil was then worked toward the cuttings."

The last week in March a complete check was made of the new stock and graft block to locate any dead vines.

ANNUAL EXHIBIT OF PRESERVED FRUITS AND VEGETABLES

The annual exhibit of the Bureau of Plant Industry featuring frozen fruits and vegetables, canned peaches of many different varieties, fruit preserves made from fresh and frozen fruit, and ice cream flavored with different kinds of frozen fruit was held on March 15 and 16. It was largely attended by commercial packers, bakers, cold storage operators, preserve manufacturers and those professionally interested in the preservation and utilization of fruits and vegetables. The visitors were invited to score the different lots so that the Department investigators could have the benefit of commercial experience and opinion regarding the different products and methods used in preparing them.

Besides a representative showing of the more common varieties of strawberries grown in the East and preserved by freezing there were shown five of the outstanding new seedling varieties developed by the Division of Fruit and Vegetable Crops and Diseases. As a group these were all characterized by excellence of color, texture and flavor, some of them surpassing any of the older varieties in general high quality. These outstanding seedlings will be given further trial by the Bureau and doubtless will be named and introduced commercially.

Most of the visitors were particularly impressed with the "fresh" quality of the frozen raspberries and Youngberries from Virginia and Georgia and the loganberries from the Pacific Northwest. From a technical standpoint, the most striking point developed by the exhibit was the injurious effects produced by the use of a very low quick-freezing temperature (-80°F.) as compared with a much higher temperature, $+16^{\circ}\text{F.}$ Cherries quick-frozen at -80°F. were badly discolored and quite distasteful in flavor while those frozen at $+16^{\circ}\text{F.}$ retained their natural color and flavor to a marked degree. The same effects have been observed with peaches and other fruits. These results confirming earlier work of the Bureau are of particular interest to packers and cold storage operators since they indicate that temperatures easily attainable in most existing commercial cold storage plants are entirely adequate if not superior for the freezing preservation of fruits. Another point of interest brought out by the exhibit was that while paper containers were quite satisfactory for certain products they were, in general, less satisfactory than airtight containers which can be sealed. In most of the non-airtight containers there was a noticeable loss of aroma and flavor and more or less discoloration of the fruit.

Great interest was manifested in the exhibit of frozen vegetables prepared at the Bureau's laboratory in Seattle, Wash., where efforts during the past year have been largely centered on the handling of vegetables by this method. This portion of the exhibit included comparable

lots of the following canned by the usual heat-process and preserved by freezing and storing at -5°F. : Martha Washington asparagus, Alderman and Telephone peas, wax beans, Kentucky Wonder and Blue Lake string beans, and Golden Bantam corn both cut and on the cob (husked and unhusked). In addition, samples of commercially frozen spinach were included. These vegetables were suitably cooked and offered for sampling. In all cases the general appearance and flavor of the experimental lots of frozen vegetables were superior to the heat-processed. One of the commercially frozen lots of spinach was likewise outstanding, but the most comment was created by the frozen Golden Bantam corn which appeared to be even sweeter than fresh corn. The "cob flavor" commonly associated with corn preserved on the cob was entirely absent in these lots.

In the utilization of frozen fruits for making ice cream the Bureau of Dairy Industry, which cooperated in this portion of the work, showed the superiority of the Blakemore strawberry over the Big Joe variety, also the adaptability of Youngberries for this purpose. Needless to say, this feature of the exhibit was very popular.

The peach exhibit comprised over 60 varieties of named and seedling peaches, some of the latter being from the extensive breeding tests of Prof. M. A. Blake of the New Jersey Experiment Station, who was in attendance. Included also were some originated abroad and introduced by the Division of Foreign Plant Introduction. For frozen pack, New Jersey seedling No. 66325 was outstanding, being of high quality and not having discolored after the close of the exhibit. All of the other lots of frozen peaches discolored a short time after thawing - and in non-airtight containers many were discolored while still frozen.

The exhibit demonstrated surprising differences in the adaptability of different varieties of peaches for the making of preserves. In general, the "white fleshed" peaches proved to be less desirable than the yellow fleshed kinds. Preserves made from different varieties varied considerably in flavor, consistency and color, giving preserve manufacturers an opportunity to make valuable comparisons since all were prepared in the same way, and the differences shown were altogether varietal. Other portions of the exhibit demonstrated the influence of the ratio between the amounts of sugar and fruit; of boiling to different temperatures; of different storage periods and ripening temperatures; and of fresh vs frozen fruits for making preserves.

The exhibit of canned peaches included both the cling types (ordinarily referred to as "canning peaches" since commercially canned peaches are largely of this type) and the freestone peaches more generally grown in eastern states. Some of the latter were very good and suggested the possibility of their commercial use because of their fine flavor. Of these Elberta from heavily thinned trees, Reeves and Ideal were outstanding. Some of the recently introduced cling varieties and unnamed seedlings which can be grown in the East also gave a very desirable canned product, and one unnamed seedling will be named and introduced as a canning peach as a result of the showing made in the Exhibit.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C. May 1, 1934

No. 9

Strawberries-- A group of tourists gazed upon Niagara Falls for the first time. "Isn't it perfectly wonderful the way the water comes over the rocks!" exclaimed a member of the group. A friend looked at her in amazement. "Wonderful?" she asked. "Why, what's to prevent it?"

You know, I am beginning to feel that way about our new strawberries. Perhaps I have been enthusing over them a little too much. After all when a man has 247,000 children one might expect to find a few Presidents and Babe Ruths among them--or even a Florence Nightingale. To date we have introduced seven outstanding new varieties which promise to replace largely the present commercial varieties, due to superior quality, productiveness and disease resistance, with a prospective annual value within five years of as much as \$5,000,000. To secure these, something like 250,000 seedlings have been handled. So, I feel I have been giving credit to the wrong parties. The new strawberry varieties deserve praise, no doubt, but where can one find adjectives to do justice to the patient and careful work involved in weeding out seven from among 250,000 plants!

Naturally, there was more or less "buck passing", as the evidence shows that George M. Darrow, George F. Waldo and C. E. Schuster, to mention the workers chiefly involved, just planted these seedlings out to begin with and left it to diseases and insects to eliminate a good portion of them. They devoted attention only to the plants which showed ability to swim after being tossed into the water, so to speak. Resistance or immunity to pests and diseases is, of course, an all-important factor in new varieties. A hybrid of great promise in other respects may be rendered valueless in the field because of its susceptibility to disease.

FRUIT AND NUT PRODUCTION

In general, Doctor Darrow and his associates started out to improve existing commercial varieties of strawberries, and specifically to secure a strawberry of superior dessert quality suitable for culture in the Eastern States; to produce satisfactory canning varieties; and to develop strawberries suitable for preserving by refrigeration. This program has been modified and somewhat extending as the work has gone on.

Varieties adapted for eating as fresh fruit, you see, are not likely to be satisfactory for canning, as cooking tends to alter the flavor and the berries lose their shape and color. For canning purposes a variety is needed having a firm flesh and a color which would not be considered the best in the raw state. And so on.

Doctor Darrow's survey preliminary to the inauguration of this breeding campaign showed ordinary market berries selling for 8 cents a quart in the Boston market, for example, while those of the then leading dessert variety, the Marshall, brought 35 cents, the difference in price being an indication of the difference in quality and flavor between the two lots of strawberries--and indicating, also, just what new and improved sorts would mean to the grower and consumer.

The Marshall is very difficult to grow in the East, however, hence the importance of the Dorsett, Fairfax and Southland Strawberries that we have introduced in connection with this breeding work. These are much finer dessert strawberries than most commercial sorts, and are suited to a wider range of conditions than the Marshall.

The Redheart is our leading contribution for the time being to the list of canning varieties, surviving after a very extensive series of canning experiments.

For preservation by refrigeration we offer the Blakemore. Neither the dessert varieties nor the canning sorts are suited to refrigeration.

Something of the comprehensiveness of this breeding campaign may be realized from the fact that about 200,000 seedlings have actually been grown in field tests. Up to the end of the 1933 fruiting season, 3,817 had been selected as being worthy of further trial (1,880 were at Glenn Dale, Md., 862 in Oregon and 1,075 at Willard, N. C.) Of these 3,817 seedlings, seven have already shown themselves superior to existing sorts in one or more respects and so have been named and introduced into commercial culture. Some 1,200 are still being tried out as of possible value themselves or as parents for further crosses. So there is strong hope of adding a few new valuable berries to the famous "seven" now being greeted with so much enthusiasm.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

Writing on April 2d concerning a recent field trip, he says: "Enroute we passed through the Banning and Beaumont deciduous fruit districts. The almond trees appeared to be normal but the peach, apricot and pear trees showed marked indications of the effect of delayed-foliation, following our very mild winter season. Coming home we saw something of the apricot and peach orchards at Semet and San Jacinto. In both instances the trees appeared to me as being affected by the delayed foliation condition.

"The unirrigated grain crops that we saw were so badly affected by the drought that little or no production can be expected from them. There were no wild flowers in the desert where one usually finds great quantities at this season of the year. There has not been any rain there to bring them on. This is also true, I am told, of the San Joaquin Valley and other locally famous wild flower regions of Central California."

George F. Waldo, Corvallis, Ore.

"Until March 26th," he writes on March 51st, "relatively little rain had fallen during the month of March, but during the past week considerable fell, insuring prospects for fairly good crops. Strawberries have been blooming occasionally in the field during the months of February and March, but a considerable number of selections have been noted to be practically in full bloom during the week. Unless severe frost occurs, the strawberry season is expected to be quite long, as many varieties such as the Corvallis, show little signs of blooming for some time."

G.E. Schuster, Corvallis, Ore.

"The past week has been spent in pollination of the early varieties of walnuts," says the report for April 9-14. "The early varieties are all now completed, with midseason and late varieties coming along rapidly. If the season holds this way for ten days to two weeks, there should be a big walnut crop. The early seedlings, which are the ones apt to miss, have had unusually good blooming weather, so that the crop from these apparently has set.... Reports are now coming in of a short Italian prune crop. I have just received a letter from Roseburg saying that the Italian prunes are almost a total failure. Reports from various parts of the Willamette Valley indicate the same thing in some of the biggest prune growing sections. An ideal blooming season was followed by a cold, rainy spell and that is claimed to be the reason for the failure of the crop.

"Sweet cherries are reported as being short also, and many peach growers have reported a short peach crop. Of course, the early season reports are always pessimistic and undoubtedly these reports will be revised upwards as the season progresses."

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"Practically the entire time for the past two weeks has been used in conducting field work upon the walnut dichogamy experiments," he reports under date of April 7th. "The weather has been such that dichogamy has been quite pronounced with some varieties in some of the districts. Pollination work has been considerably extended this year, and will include some additional localities as well as some additional varieties. In many cases our studies show that because of dichogamy the Payne variety will not pollinate itself to any great extent. In some orchards less than 10 per cent of the pistils will be self-pollinated, and at the most only 20 to 25 per cent will be self-pollinated and such orchards are the exception. At this time the Eureka's are pollinating themselves to about the same extent that the Paynes have. A number of growers are, therefore, anxious to have pollination experiments conducted in the Eureka orchards. The indications are that the Franquette variety will have the usual marked trouble with protendry in the interior valleys. The pollination work this year will be extended to the Franquette variety in different localities."

W. R. Barger, Indio, Calif.

Writing on April 16th he says that date pollination is about over "and with what I believe to be more bunches per palm than last year, and the early set bunches farther along than last year. This statement may have to be changed after I get the new pictures of a pet date palm in a commercial garden that I have photographed about ever month for a year. Our pollinating Tarzans (pollinators do not place a ladder at each bunch, but after climbing into a palm walk on the leaf bases to get to the flower clusters after cutting a trail through the leaf spines) were busy while pollination lasted. Because of the rapid issuance of spaths this year, it took four men seven days to cover twenty acres. Usually two men can do it when the flowering season is more drawn out."

ADMINISTRATIVE NOTE

Compliance With Codes In his circular letter of March 31, relative to the recently issued regulations requiring submission of certificates of compliance with codes of fair competition by bidders for Government contracts, Mr. Schoenhals stated that the question had been raised as to whether the new regulations would be interpreted as requiring the submission of certificates of compliance for all open market or emergency purchases of supplies or materials such as those made under letters of authorization. We are now in receipt of advice that the Administrator of the National Recovery Administration has granted a waiver permitting open market purchases not exceeding \$50.00 without the necessity of securing certificates of compliance. For all purchases exceeding \$50.00, however, a certificate of compliance must be attached to the voucher when it is sent to our Business Office.

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

Writing on April 12th, he says: "Tomorrow will probably see the Wenatchee Valley in full bloom. The weather has been fair, with very little wind, making ideal pollination conditions. There seems to be a slight tendency for Jonathan and Delicious to have a rather light bloom but with a possibility of a good set the crop of these two varieties should not be materially reduced.

"Yesterday we completed the blossom records on our thinning experiments with biennial bearing Yellow Newtons. In addition to getting records on the total crop under the various thinning treatments, we have classified some ten thousand spurs as to their performance last year and subsequent effect of thinning on their performance this year. Although we have not organized this data as yet, in general it looks as though they will follow rather closely our results of last year. Our 70 leaves per apple thinning, however, will probably show a higher percentage of bloom this year than our experiments of last year. This is possibly due to our trees of this year's experiment being in a little more vigorous condition. We plan to take records also on our thinned trees of last year at the Holmberg Ranch at Malaga to determine if the biennial tendencies have been definitely broken on our heavily thinned plots. Our results at the Hanna Ranch are quite striking now that the trees are practically in full bloom, and we have had many interested visitors to these plots."

W. W. Aldrich, Medford, Ore.

"The early morning of April 3 was clear and cold, "he reports on April 9, "with temperature minima from 24 to 28. All orchards equipped for heating 'lighted up' for at least two hours. At the Medford Experiment Station and in the other two orchards in the same low area heating for six hours was necessary to maintain air temperature of 51. Although some killing of blossom parts was reported here and there, there was no blossom injury of commercial importance. However, undoubtedly in unheated orchards that cold night will result in a great deal of pear fruit russeting, which will not show up for several months.

"On April 6 the appearance of codling moths was first reported by reliable observers. This is earlier than expected by entomologists. At the Medford Experiment Station, as in most orchards, a calyx spray of arsenate of lead was applied to the Bartlett variety only, since in Bartletts the calyx lobes close earlier than for other varieties. The first cover spray for all varieties, necessary within 15 days, will protect calyx cavities for the later varieties."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"Early varieties of walnuts are past bloom" he writes on April 7th. "Pistillate flowers on certain midseason varieties such as the Eureka are now in full bloom. Late varieties of walnuts such as the Vrooman Franquette are now beginning to leaf out but no catkins are shedding pollen as yet. Pistillate flowers on this variety are not visible."

He has written on March 31st that cross inoculation studies carried on in the greenhouse during the last week in March indicated that leaves of *Juglans regia* (Franquette variety) are susceptible to the filbert blight pathogen, since numerous lesions resulted from atomizing on pure water suspensions of the bacterial blight organism, followed by a 48-hour moisture period.

M. A. Smith, Ozark Fruit Disease Laboratory.

He writes that "several trips were made to orchards in nearby countries during the first half of April. "Barring a freeze," he reports, "a fair crop of peaches seems assured. Apparently all varieties except Elberta came through the winter in excellent condition. Pear and plum trees are in full bloom."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"In September, 1933, a block of 1,000 vines of Solonis x Othello No. 1615 were budded on four vinifera varieties," he comments in a report dated April 14th. "During the past week the stocks were cut back to about 1/2 to 1 inch above the vinifera bud. At the same time the buds were examined and the rubber which held the bud in place at the time of budding was cut. Out of the 1,000 buds, 22 were apparently dead, or a percentage of 2.2. At the Oakville plot, where 268 vines were budded, one bud was apparently dead at the time of cutting back the stock and cutting the rubber ties."

"The temperatures continue above normal in the Fresno section. Mr. Harmon just reported that the Panariti is in blossom, April 14th, which is the earliest date Panariti (Zante currant) has blossomed in 25 years of record taking on this variety. The previous early date of blossoming was recorded in 1916, when Panariti blossomed on April 25th. This year evidently exceeds in earliness any year since the experiment vineyard was established in 1903."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

G. B. Ramsey, Chicago, Ill. (Market Pathology Notes)

"One of the most interesting diseases that has come to my attention recently is a Corticium Rot on New York carrots," he writes on April 9. "The samples received were from the State Inspector, Mr. Duncan, at Rochester. He said that this stock had been placed in cold storage immediately after harvesting. The roots which he sent here for diagnosis were severely spotted by small slightly depressed areas which showed a slight amount of superficial fungous growth in the center. Microscopic examination would lead one to believe that this was just another case of Fusarium Rot, but when some of the mycelium was placed under a microscope, it was discovered that the hyphae showed very definite clamps and in many of the spots basidiospores were present. The common Crown Rot induced by Rhizoctania was noted in this stock and there were some Sclerotia observed on a few of the roots. However, the decay showing the presence of the Corticium stage was by far of the greatest importance. Apparently the infection took place through the secondary roots and worked up through these into the tap root. The storage conditions evidently were very favorable for the slow development of this fungus and for the production of spores.

"During one of the cold periods in February we had our first experience with frozen coconuts. One inspection of a few cars it was found that a high percentage of the nuts had the milk within them frozen solid. On cracking the coconuts while still frozen, it was found that the flesh appeared in normal condition and had good flavor. The question arose as to the palatability of these nuts after they had thawed and had been placed on the retail market, so in order to determine this we held some of the frozen nuts for a week at room temperature. On cracking these specimens we found that the milk had a tendency to be slightly stringy, but not particularly off-color. The flesh was not discolored but it was distinctly more dry and poorer in flavor than the normal coconuts.

"New York apples arriving on the market have been showing considerable development of scab and following the scab, Pink Mold Rot has been very much in evidence.

"The most important decay in Florida tomatoes this season has been due to Phoma. Numerous inspections have shown very high percentage of Phoma Rot and in some instances it was necessary to dump the greater part of some loads.

"A rather unusual development of Pot Spot has shown up in peas from the Santa Maria district in California this spring. A sample of vines sent in by the inspector in charge of the district showed the most serious development of Asochyta Blight that I have ever seen. It is said that this disease has not previously been of much consequence in that area."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"On Saturday occurred Wenatchee's Apple Blossom Festival, blessed with perfect weather and an accurate guessing of the period of optimum bloom," he writes on April 14th. "The large attendance carried an enthusiastic spirit of festivity which was in happy contrast to the chill gloom underlying last year's formalities.

"The past week has witnessed perfect weather for apple pollination. Mornings were generally with lightly overcast skies, becoming clear and quite warm during the day. Temperatures up to 85 degrees were recorded. The period of full bloom at the Van Valkenburg ranch was reached about April 10th. By the end of the week some varieties were shedding rapidly so that the calyx spray will be going on during the middle of the month."

On April 7th he reported: "Work on notes from washing injury and additional inspections on washing injury were a prelude to leaving Tuesday afternoon for Medford.

"Interviews with Medford shippers developed the fact that the Southern Oregon Sales Company used wet sawdust and shavings as a protection against freezing as soon as the cold weather in the East made it necessary to use some type of protection with pear shipments. They were elated with the results, stating that they had not a single car arrive in New York with freezing injury after wet sawdust and shavings were used.

"This type of protection is not in general use in Medford. With information we have in hand, a mimeographed report should be issued to guide shippers during next winter's shipments....

"Frost in spots occurred on the morning of April 2nd. This was followed by a week of bright warm weather, with one or two days of spring winds. Cherries came into full bloom; lilacs are breaking into blossom, with the first of the apples doing likewise. Mr. Ellison advises that the meteorological formations still resemble those of spring of a normal year, so that the danger of killing frosts still lurks over the State."

The revised edition of "Diseases and Insects of Garden Vegetables," prepared by W. W. Gilbert of our Division and C. H. Popenoe of the Bureau of Entomology, is ready. This is Farmers' Bulletin No. 1371, and is sold by the Superintendent of Documents, Government Printing Office, Washington, D. C., at 5 cents a copy. It has 46 pages of text and 64 figures.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Frozen Pack I guess H. C. Diehl will now believe that "virtue is its own reward," "murder will out," or something, because the Press Service of the Department selected frozen pack as the subject of its "Farm Science State by State" series in discussing Washington. Yes, the "H.C." now stands for "Happy Chap," which really isn't a bad description of him even under normal conditions.

"Washington and the Pacific Northwest are deeply interested in the rapidly expanding industry of freezing fruit and vegetables as a means of getting them to distant markets and of storing for seasons when they do not compete with fresh fruit," says the release, sent to hundreds of newspapers and periodicals--and used by them, as the splendid Press Service items usually are.

There are great possibilities in freezing fruit in small containers suitable for the retail trade, it points out, adding that the Northwest now freezes from 1,500,000 to 2,000,000 pounds of berries a year. "The frozen pack industry has created dozens of new problems which the Department is helping to solve. In laboratories at Seattle, Fresno, and at Washington, D. C. it has done pioneer work in some lines, has contributed to technical developments, and has also checked up on some of the over-enthusiastic claims of advocates."

The frozen pack work has also created some new problems for the plant breeder, since we soon discovered that a variety not desirable at all as a market fruit might be "just what the doctor ordered" for frozen pack. So, in cooperation with State experiment station workers, we are on our way to the creation of a new series of fruits and vegetables particularly adapted to frozen pack use.

"Comparative tests on different products frozen under various conditions have shown that individual products require different freezing methods. Some fruits--cherries and peaches in particular--are better if frozen rather slowly at moderate temperatures, rather than quickly at very low temperatures. Most of the other fruits were as well preserved by moderate freezing temperatures as by very low temperatures. These demonstrations prevented a waste of money in buying low-temperature equipment."

Not only has our frozen pack work provided this safeguard against unnecessary purchases of low-temperature equipment, but it has gone a long way toward saving packers from serious losses by pointing out that some varieties are much more desirable than others for freezing--and which. The bread our taxpayers have cast upon the waters (frozen) of this frozen pack work, is coming back promptly in the form of cake--and strawberry (frozen pack) shortcake at that!

DISEASES OF ORNAMENTAL PLANTS

Frank P. McWhorter, Corvallis, Ore.

"The extraordinary long midwinter drouth which western Oregon has been through terminated with fog and downpour," he writes on April 2d. "I have therefore revisited the localities where leaf spots are active in important bulbous iris plantings. Greenhouse tests have already shown that the *Heterosporium* fungus is able to attack the stem portion of bulbous iris. The inoculation chamber provided by the rain and the fog of the great outdoors is carrying out this treatment. Accumulated spore material which was inactive for more than three weeks has been washed down to the fleshier part of the plants and new infection centers are now provided. The present condition offers abundant proof that the growers should give very careful attention to the cleaning of iris planting stock, and should disinfect these regardless of storage rot trouble. Examination of debris from former iris plantings in areas where the *Heterosporium* spot is dominant indicates disinfection of planting stock should be resorted to as an antiseptic measure. The present appearance of many plantings will vindicate this conclusion in the eyes of the growers.

"Laboratory analyses and inoculation tests have now proven that our original supposition that the *Heterosporium* leaf spot of bulbous iris is none other than the common flag leaf spot adapted to a somewhat different host was justified. In our tests we have been able to make the flag iris strain of the *Heterosporium* pass with ease and severity to well-grown, otherwise healthy bulbous iris. This is of great economic importance, since it proves that we are not dealing with a new disease but merely with a new expression of an old one...."

He had written in March: "The thermometer says that during 14 days of February the lowest temperature was 40. This played havoc with bulb schedules. In southern Oregon, at least on the coast, Golden Spur narcissus and Dutch Iris bloomed at the same time. Narcissus is in full bloom in Oregon and in part bloom toward the Canadian border. In other words, the late varieties are blooming at a time which usually we expect only a few extra-early arrivals. This early blooming is producing decidedly small flowers with short stems. Tulips are coming in normally--they are just above ground--but iris will probably be early.

"The work of resurvey of some of the bulb plantings, especially iris and narcissus, from the standpoint of mosaic control by various roguing methods is now under way. A recent record taken on two important plantings in southern Oregon showed several large plots of iris in which it was impossible to find a single mosaic-diseased plant. Another grower had an average of one plant in 200 exhibiting definite mosaic symptoms.

DISEASES OF ORNAMENTAL PLANTS

Frank P. McWhorter (continued)

"This latter case is extremely interesting since in 1930 when the writer first made the acquaintance of this grower he was--er--decidedly obstreperous. It required a great many arguments and even demonstrations to convince him that certain badly diseased plants were not merely horticultural accidents. In 1931 he acknowledge that the diseased plants appeared to be sick and began a serious attempt at rouging out the undesirables.

"The other grower referred to has always been favorable to the development of absolutely virus-free stock, so it is not surprising to find that the stock which he has grown for a number of years is now entirely free from mosaic. Certain crops obtained as late as 1932 on which estimates of 15 per cent mosaic were recorded are now down to 1 per cent in 200

"From time to time our project is called on to meet some emergency which affects the bulb industry. At present we are faced with one in the form of a little-understood iris disease. For want of a better name we have called this trouble fire. We recorded a small outbreak in 1931, a larger one in 1932. Both of these were on the coast. During the past week there was received a number of inquiries and trouble calls from the large and important plantings in northern Oregon, and I have just completed a trip with the especial purpose of investigating what might be the situation. For the present letter, I may say that the disease is developing with a severity which it has never heretofore evidenced."

TRUCK CROP DISEASES

W. D. Moore, Charleston, S. C.

Writing on April 7th, he reports: "The spring cabbage crop is much later than usual and as previously reported will be very poor in quality. A high percentage of heads are now badly formed and some are developing seed stalks. A few plantings that were made after the first hard freeze in February will make a good yield but the crop as a whole can hardly be more than 25 per cent of normal....The potato crop is in excellent condition at this time. The growers have probably the best stand they have ever had. This may be the result of the wholesale seed treatment this spring, or the comparatively dry weather--or both. At any rate the growers are very much pleased with the present prospects....In spite of the cool weather during the germinating period, the bean crop is in excellent shape at this time. Stands are better than usual and there has been practically no damp-off."

ADMINISTRATIVE NOTES

Personally-owned Automobiles and Official Station In connection with the revised and amended edition of the Standardized Government Travel Regulations, approved by the President January 30, 1934, Mr. Schoenhals has addressed a memorandum to the field staff calling especial attention to paragraph 3, entitled "Official station - post of duty." This paragraph of the Regulations gives information regarding the meaning of the terms "Official station and post of duty" and prescribes that in no case shall a place within two miles of the traveler's office or living quarters be considered as away from his post of duty.

"In view of the fact that authority for reimbursement on a mileage basis for use of a traveler's personally-owned automobile is restricted by law to points away from his official station or post of duty, the revised paragraph mentioned has made it necessary to amend all letters of authorization so as to indicate that in no case is reimbursement for mileage to be allowed for travel within a distance of two miles of a traveler's office or living quarters.

"This is to be interpreted to mean that if a trip is started from your office within the corporate limits of the city or town, mileage will begin at the corporate limits of the town if such limits are two miles or more from your office; if less than two miles, it will begin at a point two miles from your office. If, on the other hand, a trip is begun from your residence instead of your office, mileage will begin at a distance of two miles therefrom unless the corporate limits are more than two miles from your residence, in which case mileage will begin from such corporate limits. If located at a field station outside of the limits of a city or town, mileage will begin at a distance of two miles from your office or living quarters.

"We recently transmitted a copy of an amendment to your letter of authorization putting into effect the above limitation. In view of this amendment we have been advised that hereafter it will be necessary to furnish the following statement with each claim for reimbursement of automobile mileage:

"No mileage is claimed within the limits of my headquarters, nor within a distance of two miles of my office or living quarters."

"Accordingly, it will be appreciated if you will accompany each account in the future, beginning with your April account, with the above certificate which may, for convenience, be typed on your automobile mileage statement." Memorandum dated April 17, 1934.

ADMINISTRATIVE NOTES

Registered Mail, etc. The Post Office Department has reminded us that the cost of registry service exceeds the income from this service by 44 per cent, so that any failure to limit the volume of free registered matter tends to maintain or increase this differential. In other words, will we please limit the use of free registration of official mail, especially since no indemnity is paid for the loss of any official registered matter unless both postage and registry fees are paid.

Some confusion seems to exist as to the extension of free registry to field workers. It should be understood that so far as the Department of Agriculture is concerned, only representatives temporarily absent from Washington and whose official mail is entitled to free registration in Washington D. C. may claim this privilege. This, of course, does not prevent the registering of mail by field workers where necessary to safeguard official matter, but they must pay the fees, claiming reimbursement in their expense account just as for other items.

Registered matter to be mailed out from Washington should be sent to Mr. L. O. Gillette, Clerk in Charge of Supplies, accompanied by the usual request on U.S.D.A. Form 19. He will note the character of the mail which it is proposed to register and determine whether it falls in the classes justifying registration. To aid him in deciding this, the material must be accompanied by a statement showing its nature. There are three classes of mail which are considered as requiring registration:

1. Communications where record of receipt is essential or desirable, as in the case of notice of date to begin work on contracts, notices of renewal of leases, etc.
2. Material which in the hands of unauthorized persons might be used prejudicially to the Government or the public. Examples: Transportation requests, Civil Service examination papers, etc. (This should not be extended to remote possibility of misuse, as disbursing officers' checks.)
3. Material of considerable value or material of some value the replacement of which, if lost, would be impossible, difficult, or laborious. Examples: Only existing copies of manuscripts; only existing copies of manuscript charts or tabulations. (But replaceable material of less than considerable value should not ordinarily be registered.)

In view of the above, it will be appreciated if careful consideration is given to all requests for registering mail, in order that such requests may be restricted to matter coming within the limits of the three classes mentioned above.

As stated, if registration is considered necessary, the material should be sent to Mr. Gillette with the usual request for registration, accompanied by statement of contents, etc.

Vol. 6, No. 9

May 1, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., May 15, 1934

No.10

Agriculture When the Mourning Bride becomes cheerful, the corn quits shooting, and the Weeping Willow leaves, then we'll have Sweet Peas, the garden experts tell us. But if it is sweet peace one is looking for, then the quickest way is through rehabilitation of agriculture. Never has this been so clearly demonstrated as right here and now.

"The future of agriculture cannot be considered apart from the future of industry and the future of labor," declared Secretary Wallace before the U. S. Chamber of Commerce at Washington, D.C. on May 4th. "They are all tied up together. While agriculture may suffer for five or ten years at a stretch without causing undue embarrassment to industry, the time comes when industry believes more whole-heartedly than any one else that its prosperity depends on the purchasing power of agriculture. Never have I seen such a decided acceptance of this fact as during the past month. This is largely because of the tremendous increase in the purchasing power of the South during the past year....in part because of the President's monetary policy and in part because of the agricultural program....A few hundred million dollars placed in farmer's hands seems to have a greater significance in terms of promoting city prosperity than money placed anywhere else...."

The Secretary added this encouraging prophecy: "The experience of the South this last year will be duplicated in very large measure in the Middlewest during the ensuing year."

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

Writing on April 28th he says: "The first car of strawberries was shipped from Horatio, Ark. on April 27. This is the first car of strawberries from Arkansas for the 1934 season.

"Blossom blight caused by Schlerotinia fructicola is very serious in peach orchards in the vicinity of Augusta, McCrory and Forrest City, Arkansas. The variety affected is the Early Wheeler.

"One and two-year-old plants in the peach orchards in the Nashville section are showing considerable mortality. I have received specimens through the kindness of Mr. G. Amstein, Extension Horticulturist of the University of Arkansas and have diagnosed the trouble as winter injury. Mr. Amstein says that in practically every case the young trees affected are those which were replanted in places where the trees were killed by the 1930 freeze. The root system of the young trees is intact, there are dead areas in the region of the crotch, and the leaf buds have unfolded but the leaves have collapsed subsequently as the limbs are girdled by the affected areas in the region of the crotch.

"Peach leaf curl has developed on the non-sprayed peach trees in the vicinity of Fayetteville during the week."

He had written on April 21: "A letter received during the week from the President of the Arkansas Peach Growers' Bureau at Nashville, Ark. stated: 'With reasonable weather conditions we will have around 2,000 cars of peaches from the Highland-Nashville district.' Here in northwest Arkansas the prospects are still good for a small crop of peaches. The Montmorency cherry trees are in full bloom and give promise of an abundant crop, and one of the older apple growers at Bentonville, Mr. Morton Lincoln, estimates that the vigorous orchards in the Bentonville section have prospects of a 90 per cent apple crop. Personally, I think he is somewhat too optimistic, for many trees do not have as many blossoms present this year as they did last year, but on the whole the prospects are good."

Paul W. Miller, Corvallis, Ore.

Sprays being tested for the control of walnut blight include Bordeaux mixture in various concentrations ranging from 1-1/2-1-1/2-50 to 8-4-50, copper phosphate, bentonite, and lime 2-2-4-50, copper silicate ("Coposil") 3-100, ammoniacal copper carbonate, and copper carbonate," he writes on April 21.

"Among the dusts being tested this season are copper lime dust, flotation sulfur dust, and Super Poppy black gas house sulfur dust."

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"This has been a week of fair, cool, windy weather," he writes of the week ending April 26th. "All pecan varieties except Stuart are now far enough advanced to determine their set of pistillate blossoms. There cannot be more than a moderate set of nuts this year. Even the most vigorous trees, such as those in our experimental blocks that have been sprayed, fertilized, and pruned, will set only a light crop of pistillate flowers. An occasional orchard or block of trees has been found that shows a good prospect for a crop of nuts. Those orchards, however, are few and scattered.

"The hundreds of acres of pecan orchards in the Albany district which have had no care during the past three to five years appear worse this year than during the past sixteen years. Those orchards are very slow to put out new leaf and shoot growth, and the foliage is yellowish and scant. Thousands of trees do not have enough foliage now to cast a shadow. In addition to the lack of tree vigor, the leaf case bearers are numerous and they always do more damage on trees making a slow growth....

"The first scab lesions on new pecan leaves were found on Monday of this week. The first signs of rosette were also observed the same day."

He had written April 14th: "A very striking example of the effect of fertilizer, spraying, etc. on early spring leaf and twig development can now be seen in the pecan disease control block of trees in the Taylor orchard.

"That block of trees now has sufficient foliage to cast a fairly good shadow and new twig growth one to six inches long, while surrounding orchards are just beginning to show green. The Taylor block of trees has at least a week or perhaps ten-day lead over adjacent orchards.

"An unusually late frost occurred here on April 12th and killed tender Kudzu vines in our experimental plots, and press reports indicate that watermelon and cotton were injured in some localities."

ADMINISTRATIVE NOTE.---Protests which may be received by field men from code authorities or others against the acceptance of a competitive bid on the grounds that it constitutes a code violation should be sent directly to our business office, which will, in turn, refer the protests to the proper officials for attention.

FRUIT DISEASES

J. R. Cole, Shreveport, La.

Writing from the U.S. Pecan Disease Field Laboratory on April 21, he reports that continuing his studies of the bunch disease he found two more susceptible varieties, making six in all, as follows: Schley, Pabst, Van Deman, Mahan, Success and Nelson. Grafting and inoculation experiments are being conducted in all orchards in the vicinity of Shreveport where the disease is present.

Leslie Pierce, Vincennes, Ind.

"The raspberry growers in this section report that the low temperatures the latter part of February killed from 50 to 90 per cent of the canes in plantings of Chief and Latham," he writes April 21st. "Young-berry canes were practically all killed by the freeze. No reports have been received regarding the amount of frost damage in plantings of black raspberries."

Howard E. Parson, Spring Hill, Alab.

"In the block of Schley pecans used for experimental work with scab at Spring Hill," says the report for the week ending April 21st, "the first new scab lesions of the season were found April 20th. Black pecan aphids were also appearing in considerable numbers. No new pistillate bloom could be found. The trees in this block, which have had reasonably good care, are much farther advanced than trees that have been neglected... The orange bloom is opening and a few of the petals have already fallen."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"The vinifera grape varieties are blossoming at Fresno earlier this season than any season since the experiment vineyard was established 51 years ago, back in 1903," he writes on April 28th.

"The station force has been actively engaged in grape breeding work during this blossoming period. Mr. Harmon has found with some practise about 1,800 blossoms can be emasculated in a day without injuring the pistils. The grape breeding this season has been principally along the line of back-crossing seedless types with the better types of F1 seedlings which have already fruited. Clusters of standard commercial varieties were selfed to obtain seedlings of such varieties for future breeding work.

"Grape seedlings grown from seeds planted in January have been transplanted to gallon cans and placed in a lathhouse for growing this summer. These seedlings were the results of previous back-crosses and of selfed seedlings."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"The past week was characterized by clear, warm days, with daily air temperature maxima at 80 degrees, or just above," he reported on April 16th. "Apparently as a result of such a weather condition, fruit, shoot and leaf development of the pear trees has been very rapid. Our records show the present season to be five weeks ahead of the 1933 season. In fact, tree growth has been so rapid that we have had to abbreviate many of our spring record programs. We simply can not get around to all the plots fast enough.

"During the early part of the week many Anjou and Bartlett blocks throughout the Valley seemed to have a heavy crop. By Sunday, however, it was evident that the drop of small fruits would be heavy and very early. With due allowance for the annual pessimism while small fruits are hidden by foliage, it seems that the Anjou drop may reduce the Valley tonnage below that in 1933 (666 cars of 520 boxes each).

"At present the irrigation plots at the station show striking differences in foliage color, shoot growth, and fruit set. The old "one irrigation" plot looks very 'sick'. Shoot growth has already stopped for all but a few growths. The set of fruit is very poor. 'Frequent Early' is somewhat better, and 'Frequent Late' a little better than 'Frequent Early'. Old 'Frequent' has a good crop of large, red-colored fruits, and a large number of vigorously growing shoots.

"In all cases, heavier pruning (either spur pruning or heading back of large limbs) increased the set of blossoms. However, in many plots there will be a large drop of fruit from 'heavier' pruned trees. Apparently tree vigor was inadequate to carry the heavy crop of small fruits. It is possible that the heavy drop of small fruits is correlated with seedlessness. I hope to check this within the next few days.

"I am finding the stomata open longer on the heavier pruned trees. If I can find this consistently true, it will materially help in the explanation of our results this spring."

A. D. Shamel wrote from Riverside on April 16th that the Washington Navel Orange picking was rapidly drawing to a close. "While some fruit will be held on the trees until a little later," he said, "the bulk of the crop has been picked. A considerable amount of the picked fruit has been put in cold storage, usually at 38° F. to be held for a time. There is not enough air-conditioned storage room available for the Navels, as the lemon storage is heavy at this season. I think that the temperature of 38° F. is too low and that the atmospheric humidity is also too low for best results."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"The Washington Navel and especially the Valencia orange bloom was a heavy one out here and the prospects are now good for a heavy crop. In some districts, Tulare County and others, the imminent water shortage will probably be a limiting factor in the production of those areas this season. For example, I saw last week in the Moreno Valley of Riverside County, citrus orchards that were suffering badly from lack of water. Considerable effort is being made by citrus growers hereabouts to save irrigation water through carefully controlled irrigation applications. It is likely to be a tough year for those without dependable water supplies in all districts of California.

"Our Washington Navel orange pageant takes place on Friday, May 4," continues the report, dated April 30th. "From present indications about 100,000 people in Southern California will visit Riverside that day, if the weather is favorable. It is astonishing to those of us concerned to learn of the interest and spirit of cooperation that has been evinced in this event this season."

B. G. Sitton, Shreveport, La.

"A trip was made to Winona, Tex., where zinc sulphate injections were made in pecan trees for experimental control of rosette," he writes on April 14th.

"A tree which was treated last year was cut down and although the wood showed considerable stain, there was no evidence of decay, and most of the holes had healed completely. Injection treatments were also made in the Fullilove orchard and some were made on some seedling trees on the Skannel orchard which are to be cut later to determine, if possible, the rate of movement of the material in the trees."

C. E. Schuster, Corvallis, Ore.

"This week has been occupied primarily with pollination of walnuts," says the report for the April 16-21 period.

"The sequence of varieties has no bearing at all on sequence observed in previous years. The hot weather seems to react differently on some varieties as compared to the effects on others. Some of our mid-season varieties are just now coming into bloom, while some of the late ones have preceded the midseason varieties. In addition to this, there seems to be in some cases a very uneven bloom, in that some shoots or limbs will come out much ahead of similar shoots or limbs on the same tree."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

Writing on May 3d he says: "With high average temperatures during the middle of April, the codling moths have made early emergence, the first catch in the traps being reported April 12th, and the succeeding catches up to the middle of last week were increasingly large. The cooler weather this week has reduced the catch somewhat. There is every likelihood of three broods of codling moths this year and growers are facing perhaps a harder battle than for the few years previous. There was practically no winter mortality.

"The wooly aphis also came through the winter 100 per cent and there is every likelihood for a heavy infestation of this insect. There is rather a heavy infestation of mildew throughout the district. Many growers have sought advice regarding sprays to control it, very few of which have applied a pink spray with lime sulphur. In cases where the lime sulphur was applied in the pink and sometimes in the calyx, the heavy codling moth spray program which is anticipated will cause a conflict between lime sulphur already applied and the mineral oil sprays which will be almost necessary in the first brood. There is certainly a demand for a new fungicide for mildew control. We have been fortunate so far in escaping frost injury, although night before last, April 30th, the temperatures came very close to the danger point. Cloudy weather and rains this week have probably been our salvation.

"I have been interested in observing several Winesap and Delicious orchards which had a very heavy bloom and enjoyed almost perfect pollination weather, but for some reason or another the set has been rather light. It is hard to account for this condition, although some of the orchards have not enjoyed especially good tree vigor during the last year or two."

On April 19th he had written: "Mr. Masure has tabulated the counts and in general the trees thinned to 50 leaves per apple on June 10th and the 60 and 70 leaves per apple on July 7, 1932, have practically all reverted to the same biennial bearing condition, averaging 98 per cent of the spurs blooming this year, which is again the 'on year'. This corresponds exactly to the percentage of our check, or unthinned plots. With our 70 leaves per apple on June 10th, 84 per cent of the spurs bloomed this year. I am of the opinion that if early and rather heavy thinning is not practiced this year, perhaps these will also revert to their biennial condition of two years ago. We plan to thin the trees at the Hanna orchard ourselves this year in order to maintain annual bearing if possible."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

Commenting on the work of pruning the trees in the rosette control experiments, he writes: "We had hoped to be able to measure the severity or degree of rosette on the various plots by cutting out all dead wood and weighing it. We soon found this would not be satisfactory since the trees which recovered from rosette had about as much dead wood in them as trees with fairly bad rosette.

"Treatments which caused recovery from rosette in most cases increased the leaf area and density of foliage to such an extent that shading caused the death of about as much wood on the inside of the healthy trees as die-back from rosette did in the diseased trees."

Milo N. Wood, Sacramento, Calif.

Writing on April 14th he said: "In addition to artificial pollination experiments with walnuts conducted in cooperation with growers, quite a large number of growers are pollinating their orchards to increase the yields. Several large orchards, consisting of 100 acres or over, are being pollinated and also numerous smaller ones with an acreage of 10 to 40 acres are being pollinated artificially.

"Blight is now becoming visible in some of the orchards in the San Joaquin Valley. Many of these are being sprayed but it is feared that the blight will interfere to some extent with the pollination experiments, especially in the Linden district."

George F. Waldo, Corvallis, Ore.

"Ripe strawberries were found on the Narcissa and Fairfax varieties, but not enough for commercial picking," he writes April 28th. "However, had the weather been warmer this might have been possible.

Arrangements were completed for a Strawberry Field Day on May 9th. Weather during the past week has been cool and showery, but no heavy rains."

He had written on April 21: "Due to the early season, the strawberries will be much earlier than usual. A few ripe berries have already been found, and probably picking will begin in about two weeks."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Observations of Delicious, Richared and Starking, after ripening the April storage withdrawal, were completed," he writes April 29th. "An examination of Anjou pears, which were wrapped in various oiled and copper-treated wraps, was made upon withdrawal from storage. A new series of thermo-gas experiments were started with Golden Delicious apples....The weather has been more nearly seasonal than any observed since the first of the year. Considerable cloudy and partially cloudy weather prevailed with a nice rain on April 24th and with showers and cooler weather on the 27th. Enough quiet days were had to allow growers to make satisfactory progress with the first cover spray."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

Writing on May 5th, he reports: "We are in the midst of potting our potato seedlings. So far approximately 8,000 have been potted. There will probably be nearly 4,000 more. The weather has been warm during the past few days. The ground is drying out rapidly so that some work is being done on the land, particularly on the higher areas. A few small lots of early potatoes have been planted but the greater part of the growers will not start planting for several days.

He had written on April 21st: "The potato seed, comprising 57* different lots, was planted in the greenhouse on April 6th and 7th. The plants are now up and are growing rapidly. We can probably start potting them in a week or ten days....The snow has been melting very rapidly during the past two weeks, so that there is now very little left in the fields except in the drifts. There is but little frost in the ground, so it seems probable that work on land can be started earlier than usual."

TRUCK CROP DISEASES

W. D. Moore, Charleston, S.C.

"I have devoted all of this period to making field readings on my various bean plots, particularly with referent to stands and root rot infections," he writes of the April 8-21 period. "I shall start my foliage counts during the coming week....It is interesting to note again the earliness of the Tennessee Green Pod variety as compared to the so-called standard varieties for this section. This variety is now in full bloom, whereas none of the others have developed blossoms. Much interest is being shown in this variety by the local growers at this time."

*Mr. Heinz, please note! Ed.

SPRAY RESIDUES--AND THE DEVIL'S SHOESTRING.

A young gentleman who had reached the stage where he was considering the purchase of a diamond ring, was discussing the matter with an experienced associate. "Is there anything harder than a diamond?" he wanted to know. "Yes," responded his friend, sadly; "keeping up the payments on it." But our fruit and vegetable handling, transportation and storage people have known of something harder for a long time--the problem of spray residue removal.

They will be delighted with the recent announcement of the Secretary that the Department is going after this problem in a bigger and better way. Three bureaus, Entomology, Chemistry and Soils, and Plant Industry, will participate in the enlarged program. Dr. E. N. Bressman, formerly of the Oregon Agricultural Experiment Station, will coordinate the work of the three bureaus in this investigation.

The idea, of course, is to find or develop harmless insecticides to replace lead arsenate and other poisonous spray materials now in general use to protect fruits and vegetables from insects. Many of these sprays leave a residue which presents a definite health hazard to fruit and vegetable users. The Department's strict enforcement of the regulations on spray removal act to protect the consumer to a great extent, but if harmless insecticides can be developed we shall be able to do away with spray removal activities entirely, not only safeguarding the consumer from injury but bringing first aid to the growers' pocketbooks, as spray removal work costs hundreds of thousands of dollars annually.

Being the sort of problem it is, there appears to be something of poetic justice in the announcement that the Devil's Shoestring (Cracca virginiana), a weed fairly common in the Southeast, show promise in the way of providing a harmless insecticide. Chemical analyses by the Department have established this weed as a possible source of rotenone and related substances toxic to insects. These analyses have also shown that the amount of toxic substance present, especially that of rotenone, depends to some extent on the geographic source of the plant. For this reason specimens are being collected from Virginia to Texas to determine in which locality the plant contains the largest percentage of such substances. This fall studies will be made of methods of propagating this plant in the greenhouse, to be ready for field tests in 1935.

Plants such as pyrethrum, derris and tobacco will also be studied, of course, pyrethrum being grown in cooperation with State Experiment Stations to determine the areas best suited to its culture. In Japan pyrethrum is harvested by hand labor but we have found in this country that it may be harvested with reasonably satisfactory results with an ordinary grain binder.

Anyway, we are sure that the mere announcement of these plans will make it a perfect day for Edwin Smith and his associates!

FRUIT AND VEGETABLE UTILIZATION INVESTIGATIONS

About Hydrion Concentration A hasty glance at Technical Bulletin No. 403, "Hydrion Concentration Changes in Relation to Growth and Ripening in Fruits," by Dr. Joseph S. Caldwell, might lead one to suppose that the bulleting was prepared in an effort to promote the wider use of the dictionary. This is not true. As a matter of fact, it reports on an important type of work in progress since 1927, though done in such fragments of time as could be given without interruption of other projects.

This work developed as an outgrowth of a study of the relation of hydrion concentration changes to the course of the ripening process in fruits which has as its purpose to determine whether the hydrion concentration of the juice is a dependable criterion of the stage of maturity of the fruit. Do you follow me, or am I going on alone?

Well, in the work discussed, determinations were begun as soon after blooming as the fruits had set, in some cases when the withered petals were still attached, and repeated at short intervals through the entire period of development and maturity. Apples, cherries, oranges and grapefruit, strawberries and blackberries, were followed through their development in detail, several varieties of each fruit being employed, and the determinations were accompanied by collections of samples for chemical analysis. Raspberries, elderberries, and pokeberries were also studied in less detailed fashion.

The results show that in all these fruits of widely dissimilar morphological character and length of developmental period there are certain consistent relationships between changes in hydrion concentration (active acidity), water content, and rate of growth which seem to Doctor Caldwell to have very considerable physiological significance.

In all these fruits at time of setting and for a short period thereafter the fruit has a high solids content, the cells are in rapid and general division, the rate of increase in weight (considered as percentage increase per interval) is slow, and the active acidity of the juice of the fruit is at the general level of that of vegetative parts of the plant concerned. This period is succeeded by a period, always short in terms of the developmental period of the fruit, in which active acidity very rapidly increases, the amount of the increase varying with different species between ten-fold and eighty-fold the initial concentration.

Concurrently with this rise in acidity, the fruit begins to absorb water at a rapid rate and comes to a condition of maximum hydration, with a minimum content of solids. In consequence, the rate of percentage

FRUIT AND VEGETABLE UTILIZATION INVESTIGATIONS

increase in weight is very greatly increased and attains its maximum for the whole developmental period. The three changes, increase in active acidity, increase in water content, and increase in weight, begin simultaneously or nearly so, proceed together and attain a maximum together. With cessation of the rise in active acidity, the rate of intake of water and that of increase in weight abruptly falls off.

Doctor Caldwell offers as a tentative explanation of the concurrence of the three processes in time, the hypothesis that the increase in active acidity is the cause of the other two; that the increase in imbibitional capacity of the hydrophilic colloids of the young fruit produced by the increase in active acidity produces a force capable of attracting and holding considerable quantities of water. As a result, the fruit rapidly becomes hydrated, the gain in weight being chiefly one of water. Morphologically, this is the period of rapid cell enlargement.

With the attainment of maximum active acidity, the rate of water absorption and of increase in weight falls off because the imbibitional capacity of the hydrophilic colloids at the existing acid level is satisfied. Consequently, water content may decline considerably during the later development of the fruit, more or less closely paralleling the gradual decline in active acidity which is continuous throughout later development and ripening.

Very good.

But what is responsible for the very large and abrupt rise in the active acidity of the young fruit which sets the whole machinery in motion? If the genial and polysyllabic "Doc" has any ideas on the subject at present he is, like Brer Rabbit, "layin' low and sayin' nuffin'."

Still he is keeping on the job--in such fragments of time as can be given without interrupting other projects--well realizing that cryptogamous concretion never grows on mineral fragments that decline repose!

The figures and tables in the bulletin add much to the value of the discussion, and there is a very interesting and compact review of literature reporting results of determination of hydrion concentration or titratable acidity, or both, made upon developing fruit. There is reference also to no fewer than 37 papers cited in the bulletin. The Doctor assumes, of course, that you already have a dictionary.

GOVERNMENT WINS CASE ON FRUIT-WASHING PATENT

"A decision of great importance to the fruit and vegetable growers of the United States was made April 16 by the U.S. Court of Customs and Patent Appeals when it awarded priority to Arthur M. Henry of the U.S. Department of Agriculture on a public service patent covering a process for removal of poisonous spray residues from fruits and vegetables," says a news release from our Press Service.

This process consists essentially in the removal of spray residues containing such poisons as arsenic and lead by washing the fruit or vegetables with dilute alkali and acid solutions, followed by rinsing and drying. It takes the place of the old wiping methods, and has been used to a considerable extent for many years.

The decision comes after nearly seven years of litigation in which Ernest M. Brogden and Miles L. Trowbridge of California claimed prior invention of the process and contested the validity of the patent issued to Henry. Since the public service patent of the latter is now made secure, it means that the process is free, and royalties saved fruit and vegetable growers and handlers. The cheaper the process, too, the greater the probability of thorough protection of the public health through removal of harmful spray residues.

MICROBIOLOGICAL STUDIES ON FROZEN MUSHROOMS

One of the NEWS LETTER's Chicago friends calls attention to a paper in the Canner for April 7, 1934, by Helen F. Smart of our Division, on "Microbiological Studies on Frozen Mushrooms." We are always glad to be reminded of such pieces of work by our Division, but in the present case the reminder appears to have been selected merely as a wedge for inserting our correspondent's latest mushroom story.

According to her, a lady in Chicago had been presented with some mushrooms which she wanted to serve at a dinner that evening. She was a little doubtful, and finally had the cook try some of them on the dog. Since he suffered no apparent ill effects, the mushrooms formed part of the dinner. Just about the time they had been consumed, however, the cook called her mistress to the door and informed her that the dog was dead. The lady of the house waited to hear no more but quickly summoned doctors and stomach pumps. The guests apparently saved, one of the doctors suggested that they take a look at the dog. The lady led them out to the kitchen. "Oh, you don't want to see the dog," protested the cook, when they explained their wishes. "He was terribly mangled by the truck which ran over him."

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The Official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., June 1, 1934

No. 11

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

\$17,000 "Since the last report, some time has been spent in the Sacramento Delta district in making shipping tests with asparagus in cooperation with the University of California," writes W.T. Pentzer from Fresno, Calif. on April 30th. "The results so far indicate that under the present practice of precooling thoroughly and shipping under Rule 247, asparagus even of questionable carrying quality can be shipped so that it will arrive in good condition.

"Asparagus of the 'long green' type, cut during a warm day and left in the field for five or six hours, the asparagus itself heating to about 100 degrees in some cases, carried in good shape. We were fortunate enough to have our test crates and eight Ryans in one car that was reported by a representative of the shipper to have arrived in a moldy, slimy condition, and our Ryan temperatures will be used by the shipper to determine whether or not the car should have been shipped under standard refrigeration instead of Rule 247. Incidentally, this shipper estimates that about \$17,000 has been saved this season in their asparagus shipments by taking advantage of the lower rates allowed under Rule 247, so they do not wish to change the method of shipment next season unless it can be clearly shown that higher transit temperatures under the latter method of shipping was the cause of the condition on arrival.

"Our test crates in this car, some of which were abused by excessive delay in picking up after cutting, arrived in good condition. The excellent, detailed inspection made by Doctor Wiant and Doctor Bratley has been greatly appreciated by the shippers at this end."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Winesaps have set a good crop, but for the second year in succession Delicious are spotted with many ranches having a light set," he reports under date of May 5th. "This happened despite the fact that weather conditions at the time of blossoming were warm, still and ideal for the work of bees. Lack of pollenizers and possibly a devitalized condition of some of the orchards are the factors considered responsible for the failure of Delicious to come back."

H. C. Diehl, Seattle, Wash.

Writing on May 14th he says: "An exceptionally early season has put the commercial strawberry harvesting under way in Oregon, and the coming week will see it undertaken in the Washington districts. Production is satisfactory, although the effect of the severe 1932-33 winter freezes is still noticeable. So far the fruit has been in good condition.

"Due to a Coast-wide longshoremen's strike, the movement of sugar for frozen pack strawberries has been stopped. As a result, the local markets have been flooded lately with fine berries at unusually low prices. In addition, the frozen pack market has been very quiet, six cents per pound being the prevailing price for futures, with little or no speculative packing."

POTATO INVESTIGATIONS

W. C. Edmundson, Greeley, Colo.

"Last week four meetings were held in different sections of the district by the Agricultural College for the particular purpose of discussing psyllid yellows or 'purple top,' and its control," he writes May 7th. "Mr. L. B. Daniels of the Entomology Department, and Mr. Carl Metzger of the Horticultural Department, were the speakers. Mr. Daniels advised the growers to begin spraying when the disease first made its appearance. He recommended lime-sulphur, one gallon to 45 gallons of water, and recommended that 400 to 450 pounds pressure be used in applying this spray."

TRUCK CROP DISEASES

Dr. W. D. Moore writes from Charleston, S. C. that plant diseases, especially with reference to beans, have caused less trouble this season than at any time since he began work there three years ago. "The dry season, together with the widespread practice of buying western-grown seed, has removed for the time being the largest limiting factor in bean production in this section. Root rots, heretofore quite important, have likewise caused practically no damage. Other crops such as potatoes, tomatoes and cucumbers have shown practically no disease to date."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"The pear growers of the Valley are seriously engrossed in three subjects: Codling moth, fruit crop, and marketing agreements," he writes on April 30th. "All three are causing concern, and only the first, codling moth, can be reported upon optimistically.

"Many pear growers are using oil (1 gallon of 75 viscosity) with the arsenate of lead in the 10-day (or second cover) spray. Apparently codling moth mortality during the winter was low. The 'peak' flight this spring at the Medford Experiment Station occurred during three days, with 180, 240 and 180 moths per night in a single bait pan. In 1932, 78 moths per pan was the maximum, and in 1931, the maximum was 37. Every one is spraying, but many are not doing a thorough job.

"There has been, and will be, a very heavy drop of small Anjou fruits. Allowing for undue pessimism now while many fruits are hidden by foliage, I believe the crop will be 30 to 40 percent short of last season's 664 cars. Although Anjou pollination was poorer than normal, this drop occurred on limbs that I had hand-pollinated. It is serious on spur pruned trees, which originally had a heavy set of fruit. In view of the warm period during the following bloom, during which both fruit and shoot development was very rapid, I suspect that tree energy was overtaxed. Pruning increased the original set in every case (11 sets of plots). Heavy pruning of devitalized trees increased set more than equal pruning of more vigorous trees. This suggests a C/N ratio condition. However, some very vigorous young Anjou trees left unpruned set practically no fruit.

"Our moderately spur pruned commercial block (Block 4) originally set a heavy crop, but during the past week has lost so much fruit that the crop will be very light. In the plots having only one irrigation in 1932 and 1933, the drop has been so heavy that for some trees there are not fifteen pears within eight feet of the ground for measurement. However, there is one bright spot--"Old Frequent", which had seven irrigations in 1932 and also in 1933. It had a moderately light bloom (due to high soil moisture during May and June of 1933) and a moderate original set, but it still has a very good commercial crop, which is growing rapidly."

On April 23d he wrote: "In the Central Point and Grants Pass districts, serious blight (Bacillus amylovorus) epidemics have started. The old phase of this blight infection is that Anjou is more infected than Bartlett or Bosc, usually our more susceptible varieties.

FRUIT AND NUT PRODUCTION

W. W. Aldrich (continued)

"Since the blight has entered the more vigorous blossom clusters, the fruit on the spurs more likely to hold fruit during the spring drop has been infected. In several orchards this blight infection of Anjou has reduced the crop 80 percent.

"Comice show a blossom blight only. This is probably what Doctor Rosen of Arkansas classifies as 'Phytophthora syringae, or pear-blast.' In some cases, it has affected half the blossoms on Comice trees.

"Over Sunday more than half an inch of rain fell. This may spread the infection over the tree where trees already have a blight infection in the top."

April 2, he wrote: "The \$4.00-per-box for Anjous has been bringing many smiles around the Valley. However, it has also resulted in renewed enthusiasm for the care of marginal pear orchards. I am astonished at the 'scrubby', previously neglected orchards which are receiving a spring cultivation and spraying. I know of two large orchards in which pruning was started during full bloom. One man tried applying 'dormant' lime-sulphur during full bloom. With a heavy bloom on all varieties, a large pear production for the Valley is in prospect.

"Although the Anjou bloom had seven or eight days during clear weather while the Bartlett blossoms were shedding pollen, there was very little wind and almost no bee activity. During the past week, when Anjou and Bartlett bloom was losing petals, Bosc and Winter Nelis were in full bloom. Although it rained a great deal, I observed some bee activity in Bosc.

"The lack of bee activity in pears is assuming more importance to me. I shall be anxious to find how much increased set I obtained by hand pollination of Anjou and Bartlett."

Milo N. Wood, Sacramento, Calif.

"The almond trees in some orchards in the interior valleys have been dropping their crops and developing a decidedly sickly appearance of the foliage with numerous dead twigs frequently resulting," he writes under date of May 5th. "In the orchards thus far examined, it has been found that the cause of the trouble is under ground, and different methods of cultivation, cover crop handling, and especially methods of applications and quantity of irrigation water, have been found to be the cause of the difficulty."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"During the week the percentage of 1934 shoots producing pistillate blossoms was determined on the trees used in our pecan thinning experiments," he reports for the week ending May 5, 1934.

"A total of from one to two thousand shoots were examined on each tree for this purpose. During early August of 1933, the number of nuts and the number of leaves were determined on twelve Moore pecan trees. From August 10 to 15, the leaf area per nut on these trees was modified by removing nuts only.

"This thinning was done too late to have any effect on the size of the nuts, as the shell had become hard at the time the thinning was done. In order to prevent the effects of translocation from one limb to another, the nuts on whole trees were thinned to a definite nut-leaf ratio.

"The results are summarized in the following table:

	Less than 4.5 leaves per nut	From 4.5 to 9.0 leaves per nut	More than 9 leaves per nut
Average number of leaves per nut ...	4.1	6.9	11.0
Number of 13/16 nuts to a pound ...	92.0	85.8	83.5
Number of 14/16 nuts to a pound ...	82.5	77.0	67.8
Percentage of 1934 shoots blossoming	4.97	27.77	46.65

"It is planned to continue this work this year, only on a much larger scale. The rainfall at Philema during the week was .85 inch."

J. L. Pelham, U. S. Pecan Field Station, Shreveport, La.

Writing on May 12th, he says: "There is not such a marked difference in fruit setting this year on the modified branches as has been observed in previous years. The crop of Stuarts is very scattering, some trees having a good crop and others very little. In some orchards there seems to be almost a total failure of Stuart fruiting."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

Writing on May 14th of a visit to an apricot grower to inspect a limb variation, he says: "In one of the otherwise normal trees the grower has found a small branch about five feet from the ground that has produced fruits that are much earlier than the normal ones. The fruits are of the Royal variety, but were about three times the size of the normal fruits on this or nearby trees when we saw them. Then, too, there is a normal quantity of crop on this branch, while the remaining branches have only a very light crop. The foliage of this branch is normal so far as we could determine, excepting that it is not apparently affected by the delayed foliation condition this season.

"We are inclined to believe that this limb is an early maturing sport and possibly resistant to delayed foliation. We have arranged with the Armstrong Nurseries to propagate a few trees from this limb for a progeny test and the owner is planning to topwork some of his orchard trees to it....

"The hot weather continues and it is apparent that a long, hard irrigation season is ahead of us owing to the peculiar winter and spring climatic conditions. There were no heavy winter or spring rains to fill up the subsoil or to relieve the early irrigation stress. Some orchard districts near here are even now showing the effects of drought and the trees are in more or less permanent wilt. Fortunately, the Riverside district has one of the most dependable of irrigation water supplies and there is no immediate prospect of a serious water shortage here."

HOOD RIVER CONDITIONS

All other work has been pushed aside by a severe epidemic of pear scab which has assumed serious proportions in extent of infection and added importance because both pear and apple scab have been generally of no importance since an epidemic that ended in 1916, and hence almost completely unknown or forgotten by the present generation of growers, says a report for the April 22-28 period. There is 10-30 percent foliage infection and 50 percent or more fruit infection on some unsprayed trees.... During several years past there have been two small areas of infection of pear scab in this district and a few growers have consistently used home fungicides against apple scab but generally throughout the district there has been no attention paid to scab control....The fact that pear scab increased so greatly while apple scab did not may be due to the recent tendency of growers to reduce or omit all spraying on pears during recent years of low prices. Worms are not usually as serious on pears as apples and many pear orchards in lowlands have not even had arsenical used on them in these years when crops have been light because of weather injury."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"The grape varieties in most sections of California are now past the blossoming period," he writes on May 19th. "While it is still early to predict the crop prospects, the setting of fruit at this time would indicate a rather heavy wine grape crop, a normal table grape crop (excepting Sultanina), and a slightly poorer crop of raisin varieties. The appearance of a heavier wine and table grape crop is principally due to a lack of spring frosts in the coast counties and only a slight frost in scattered locations of the Lower San Joaquin Valley. The future condition of the crop will depend to a great extent, especially in the San Joaquin Valley, on the degree of leafhopper control and the available water supply for irrigation. Leafhoppers are more numerous this season than last year and are even present in injurious number in the Napa Valley, necessitating control measures in that section which has not been seriously affected in recent years."

"The supply of gravity water for irrigation purposes in the San Joaquin Valley will be limited this season. Allotments of water have already been cut down one-third from earlier allotments. This is serious where growers depend entirely upon gravity water and do not supplement it with water from a pumping system. Many growers however on account of finances depend entirely upon gravity water. Fortunately at the Experiment Vineyard we depend entirely upon water pumped from the underground supply. The water level in our well now stands at 15 feet 7 inches from the soil surface."

George F. Waldo, Corvallis, Ore.

"The activities of the past week have been confined entirely to examination of strawberries, particularly making selections of seedlings and picking out selections for canning and preserving," he reports for the May 14-19 period. "The Horticultural Products Division, under the direction of Prof. E. H. Wiegand, is making these tests. The preserving berries are carefully examined as to color, acidity, and amount of sugar. Other samples are taken and frozen for making into preserves later on....On Tuesday a trip was made to Myrtle Creek, Ore. to examine strawberry selections there. Thursday a trip was made into the Hood River Valley for the same purpose. The Clark Seedling, the principal variety of strawberry grown in the Hood River Valley is very much diseased with a rhizoctonia root rot. It is questionable whether the Clark Seedling will remain much longer as a commercial berry."

C. E. Schuster, Corvallis, Ore.

Writing of a visit to Coos and Curry counties to observe walnuts and filberts, he reports that near the coast walnuts seem very slow in developing, growing a little each year, but taking three or four years to get fully started, and even then it is difficult to find walnuts developing as they would in the interior valleys. "The filberts make a good growth, but on the material that we were able to examine the production was not very good," he writes.

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

Writing on May 15th, he says: "Clouds of dust from the Northwest obscured the sun throughout the day on May 10th. For the greater portion of the day visibility was less than one mile. The dust settling on the foliage of trees and shrubs following a light shower in the afternoon gave the leaves the appearance of having been spread with a mixture of arsenate of lead and lime-sulphur that had stood without agitation for some little time. Tests made in Chicago at the height of the dust storm showed approximately 400,000 particles of dust in each cubic foot of air....An occasional blighted twig on Jonathan was noted on May 11th. By May 15th the disease was present on this variety in a moderately severe form in all of the orchards in the section. The infection probably occurred during a four-hour rain the morning of May 5th....In marked contrast to the severe outbreak of peach leaf-curl which occurred last season, only one leaf showing the disease has been noted this spring."

He had written earlier that the total rainfall for the month of April as recorded in Vincennes was only .57 inch, a departure from the normal of -2.59 inches. "A frost occurring the morning of April 25th," he wrote on April 30th, "killed a high percentage of the apple blossoms on trees in low ground....A minimum temperature of 32 degrees was recorded in Vincennes, and 31 at the Purdue-Vincennes farm. Five thermometers located at different elevations in the Reed & Son orchard registered 22, 22.5, 24.5, 25 and 28 degrees, respectively. From 40-75 percent of the blossoms on about 40 acres of trees where the lowest temperatures occurred were killed. Practically all the central blossoms and a high percentage of side blossoms were destroyed. In the case of about 75 percent of the blossom clusters one or more side blossoms in each cluster escaped destruction. The very favorable conditions for pollination existing through the three-day period from April 28th to 30th may result in a good set of fruit from uninjured side blossoms....Frequent examinations indicate that less than 1 percent of the scab perithecia in fallen apple leaves have matured spores, probably on account of an insufficient supply of moisture. The only heavy discharge of scab spores secured in a moist chamber up to the present time was from Stayman leaves collected under trees not sprayed last season."

Howard E. Parson, Spring Hill, Ala.

Writing on May 5th, he says: "The trees in the rosette experiment are all Stuart. They are just putting out their pistillate bloom. Both check trees and treated trees are in a good state of vigor and have set a fair crop of nuts. Previous years nuts on the severely rosetted parts of the trees have reached only one-third or one-half their normal size and died. It is hoped those on the treated trees will do better than those on the checks this year. There are no signs of injury from treating the trees with zinc sulphate so far this season. Some of the trees have been injected with 50 grams C.P. zinc sulphate per tree (one season) and some have been fertilized with as much as 20 pounds per tree of commercial zinc sulphate for two seasons."

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"The entire week ending May 19th was devoted to scab and rosette spraying operations. The week was showery, which interfered considerably with the work, but we managed to apply about 8,000 gallons of spray.

"As mentioned in an earlier report, the pecan crop will be light this year, but better than either of the past two years, and estimated by growers to be about 50 to 60 percent of the 1931 crop."

John C. Dunegan, Fayetteville, Ark.

"Strawberries are being shipped from fields at Fayetteville and Farmington," he writes May 12th. "The berries are meeting with competition from fields further south and the price is somewhat lower than the local growers had expected."

He had written on May 5th: "A heavy rain storm during the night of May 3d brought much needed moisture to the Fayetteville section and cloudy weather with occasional showers has afforded additional relief on May 4th and 5th. Apple scab lesions on the leaves of the Ben Davis variety were observed for the first time this season on May 4th. The spots on the leaves were very small and represent very early stages in the development of the fungus."

P. W. Miller, Corvallis, Ore.

Discussing the special effort being made this season to determine the value of the more common types of fungicidal dusts in the control program, he writes on May 12th: "In one cooperative test the dust is being applied by the use of an airplane, the machine blowing the dust mixture onto the trees and ascending as low as 75 feet from the ground to do so. The dust is carried in a specially constructed compartment in front of the cockpit, and is scattered by the air currents set up by the propeller and two small propeller agitators...."

"The extent of the damage caused by the unseasonably low temperatures which prevailed in December, 1932, is now becoming evident," he continues. "A number of trees in a bearing Fraquette orchard near Schools, Ore. failed to come out in leaf this season. On examination, these trees were found to be dead. The crowns of many trees in this same orchard showed injury to a greater or less extent. 'Islands' of cambial tissue in the crown which were not killed are laying down new tissues in many cases, and the majority of the injured trees will probably recover."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore. (continued)

"According to an Oregon State College agricultural press release," says his report for the week ending May 5, 1934, "the prospective southern Oregon peach and apricot crop is estimated to be the largest ever produced.

"The pear crop of Jackson county promises to be about normal, with a possible reduction because of shortage of the moisture reserve. The State pear crop as a whole may be somewhat less in tonnage than that of last year. The total apple crop in the State this year is in excess of last year. The prune situation is highly variable, ranging from a near failure in Douglas county to a crop at least double that of last year in Polk county. For the State as a whole, the indications are for a crop equal to about the 1933 yield. Most sections report fair to good cherry prospects. Among the berries, the strawberry crop will be above last year's short crop, and the raspberry crop prospects are good on an acreage somewhat reduced in leading producing centers."

Writing on April 28th, he said: "Studies on the bacterial blight disease of filberts were carried on during the week...It would seem from the results of inoculation studies carried on thus far that current infections of filbert stems and leaves by the filbert blight pathogene take place primarily during early spring, probably during the months of February, March and April in an average year.

"In studies of the relation of moisture to infection of walnuts by the blight pathogene carried on during the week, only one-half hour of continuous moisture treatment after inoculation was found to be sufficient to cause infection of nuts which were in the post-bloom stage of development (8 mm. in diameter) when inoculated."

H. F. Bergman, Amherst, Mass.

"Considerable time was spent late in the week on further field study of the disease on blueberries," he writes for the week ending May 19th, "and several photographs showing conditions as they existed at the time were taken. It now appears that in one field of three acres every bush must be cut to the ground if the planting is to be saved from complete destruction. For the first time the disease appears to be developing to a serious extent on the planting at the State Bog. Nearly every plant shows more or less infection, and in a few instances entire large stems are dead to the ground."

FRUIT DISEASES

J. R. Cole, Shreveport, La.

"The pecan crop will be lighter here this time than last year," he writes May 12th. "The Stuart, which is the most important variety here, has a very light set of nuts, while some of the others, Pabst and Centennial, have a very heavy set. But the Centennials usually fall before maturity, so when the Stuart fails around Shreveport, a light crop of nuts is usually expected."

He had written May 5th: "On Monday, Smith and I, accompanied by Mr. Fred W. Mally, County Agent for Bexar County and located at San Antonio, Tex., sprayed rosetted trees at the Goethe orchard and at the Country Farm, both located near San Antonio.

"We also have soil applications and injections of the zinc sulfate in the trees at the County Farm. Most of the trees, comprising a large acreage, are severely rosetted in both of the orchards mentioned. The foliage in these orchards was also rosetted when it appeared this spring. I inspected the large orchard at Uvalde on Tuesday, some of the trees having been sprayed with zinc sulfate six times in the past two seasons, while others have only been sprayed one time. (I should have said that all of the others have been sprayed one time, for they sprayed our checks as well as the soil treated trees.)

"One year ago the trees that had not been sprayed the previous season were severely rosetted. Tuesday I was only able to find two trees that showed any signs of rosette and they were of the Texas Prolific variety, which is very susceptible to rosette. The only difference that I could see in the trees receiving one application of zinc sulphate spray and those receiving four applications, was that the former had increased one-third in circumference and the latter had doubled in circumference. The trees are five years old.....

"I observed the bunch disease in two orchards, on native trees at Richmond and Sugarland, two small towns on the San Antonio-Houston highway near Houston."

M. A. Smith, Ozark Fruit Disease Laboratory.

Writing on May 5th, he reports: "Apple scab has been very late in making an appearance this spring. In an inspection of the plots at Marionville last week only an occasional leaf bearing infection could be found. In spite of the general prevalence of ascosporic inoculum, many apple scab perithecia examined in April appeared to be immature or partially so.... There is a good crop of peaches, plums and cherries in prospect in this section."

BULB INVESTIGATIONS

Doctor Griffiths has recently returned from Puget Sound, where he spent six weeks on the wind-up of C. W. A. work at the Bellingham station. He reports a large amount of repair to buildings accomplished and most of the old tiling on the place revamped and put in condition. "The largest job undertaken was the clearing of close to 20 acres of additional land, draining the same with 3,400 feet of trunk-line tile, and plowing and grading the same area. The station now has land suitable for crops which have not been quite successful heretofore.

"The season in the Northwest generally has been very "unusual." After a deluge of rain in December and January, there was more clear weather than usual. March and April were particularly fine for field operations. Very little time was lost by laborers during the two months on account of rain.

"The winter was exceedingly mild; indeed, it is customary to speak of it as no winter at all. Many tender plants went through uninjured. Crops which always suffer more or less went through the winter without being in the least injured. It is customary to have treacherous frosts during April and early May after plants come up and while tulips are in bud and blossom, but we escaped that this season. But one light hail occurred. This is the first winter in our history when Dielytra spectabilis has blossomed perfectly. It is almost invariably injured by late spring frosts.

"The season is particularly early. In average years, Darwin tulips start to open in the early days of May. This year we cut the blossoms late after many petals had fallen, and finished April 28th. The flowers really should have been taken off by April 20th, two weeks earlier than they usually open. Tulips and daffodils were in blossom three weeks earlier at Bellingham this year than in Washington, D. C. The reverse is usually the case."

Robert H. Peebles, Sacaton, Ariz.

"The past winter was very mild," he writes under date of May 14th. "The date palms reflect this in the abundance of flower stalks which they have produced, in contrast with the paucity of flowers last spring following one of the most severe winters on record. With some exceptions or apparent exceptions, this behavior holds true for the date gardens in the Salt River Valley.

"At present the weather is about as hot as we usually get a month later, and the total mean temperature since January 1 is much in excess of the average. The mean temperature at Sacaton for January was 0.9 degrees over the 1910-1930 average, February 3.7, March 7.4, and April 6.4. Last Thursday the maximum was 110, followed by 109 on Friday."

GASSING FRUIT SHIPMENTS!

Merely a Matter of
Many Millions!!

Speaking of the matter of placing solid carbon dioxide with ice in refrigerator cars to prevent transit rots from developing and to keep fruits firmer, those hardened wretches over in the Department's Press Service remark quite calmly, "This would decrease substantially the present annual losses of many millions of dollars caused by rots and other diseases developing in the fruit during shipment." As an aspirant for the honors of chief horn-blower of this Division, I arise to protest that a substantial part of many millions of dollars is not a matter to be taken calmly. Sound the trumpets, boys, sound the trumpets!

"Transit disease specialists of the Bureau of Plant Industry have found that in experimental shipments the greatest development of transit diseases occurs within the first 24 hours after the fruit is loaded in cars," explains the Press Release in question; "that precooling the fruit in cold storage or by other methods stops most of this early disease development, and have discovered that treating the fruit in the cars with carbon dioxide gas has practically the same effect on disease organisms as precooling.

"The success of the experiments is regarded as highly significant for many of the fruit shippers of the country, especially for those who must rush their crop to market, or for those who cannot make use of precooling facilities and ship most of their fruit directly after loading. The principal advantage of this gas method is not that it will replace present precooling practices, but that it will give the advantage of precooling to shippers to whom refrigerating equipment is not available.

"The carbon dioxide treatment is simple and has several outstanding advantages. The fruit is treated by placing small quantities of solid carbon dioxide over the load or in the ice bunkers in addition to the ordinary icing. Instead of melting to a liquid as ice does, the solid carbon dioxide changes to a gas and not only cools the fruit but has also a definite physiological effect in preventing the development of transit diseases and in keeping."

The really important angle for many growers is that the gas treatment permits immediate shipment, you see. Growers could get about the same effect, perhaps, by precooling the fruit shipments, in cold storage, by ice, or by using blowers to circulate cold air in the cars--BUT each of these methods requires special equipment--and takes time just when the grower may need to rush his fruits to market. In such a situation we step forward with the solution--GAS 'EM!

Vol. 6, No. 11

June 1, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., June 15, 1934

No. 12

New Zealand Apples. "The first commercial shipment of New Zealand apples to come to New York City was received early in May," writes C. O. Bratley of our section of Fruit and Vegetable Handling, Transportation and Storage Investigations, from New York City on May 25th, a little too late to catch our June 1 issue. "It consisted of six cars arriving on consecutive days, mostly of Delicious and Jonathan varieties, but with a few boxes of Cox's Orange Pippins and Statesman. The shipment was from a solid boatload of New Zealand apples en route to England which docked in Halifax, Nova Scotia and discharged 12,000 cases for sale in Canada besides the six-car equivalents for New York.

"Although all were marked extra fancy pack, the quality of the Delicious and Jonathan varieties was inferior to that of extra fancy domestic apples. Many were small, poorly colored, and irregular in shape. The maturity was good, being a little on the unripe stage for good eating. Scab, Gray Mold Rot and Blue Mold Rot were found in the shipment affecting a total of less than one percent of the fruit.

"Apparently the trade at first was afraid of the apples for no adequate price could be obtained for the first car on the first day it was displayed on the auction. The following day the car sold for 70 cents per box less than domestic cold storage apples of the same grade and variety. The second car sold with about the same price differential; the third at 50 cents differential; the fourth at 20, the fifth at 30 and the sixth at 5 cents differential. Even with a sales price received for the final offering of \$2.11 per box, the consignee thought it doubtful if more than packing and shipping charges would be realized, and said he intended to handle no more of the fruit."

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"Around \$400,000.00 has been brought to farmers of Washington County through marketing of the strawberry crop it was estimated by local growers," he writes in his report for the week ending June 2.

"A total of about 558 car loads of berries left the county by rail and truck, according to estimates. More than 400 were shipped out over the Frisco, and the remainder were trucked out. The only town in the county from which large quantities were trucked was Springdale, where about half the crop moved by truck.

"The average price for the season has been around \$1.50 to \$1.75, over the county. This would be \$630.00 to \$735.00 per car.

"Farmington shipped 159 cars by rail and only three or four cars were trucked out. Springdale sent out 137 cars by rail, and Fayetteville sent out 73 cars by rail and around 10 car loads were trucked out. Prairie Grove shipped out 36 cars by rail.

"Bacterial spot has appeared in the various peach orchards of the district, and a number of the growers are thinking of using the zinc-lime spray. In 1929, I had an experimental block of Elberta trees near Springdale demonstrating the use of the zinc-lime spray, but the majority of the growers were not interested in peaches at that time.

"This year the growers are expecting high prices for their fruit, and are accordingly very much concerned about the bacterial spot situation, and their attitude toward the zinc-lime spray has changed completely.

"The heat wave which has involved the central portion of the county has brought high temperatures to Arkansas, and a record of 48 years standing was broken at Fort Smith on May 31, when the temperature reached 99 degrees F. at 2 P. M.

"The high temperature and the lack of rain are affecting farm crops in the district."

Writing on May 26th in connection with his plan to apply the second cover spray to the Stayman plots at Fayetteville on May 23, he said: "The Stayman plots are adjacent to a variety orchard consisting of different kinds of prunes and plums and the apples show a considerable number of stings from the plum curculio.

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark. (continued)

"The scab fungus has developed to a limited extent on the leaves in the check plot. Fire blight is present in a number of orchards throughout the district in an aggravated form this season. The Jonathan variety seems to be very severely affected. Dr. H. R. Rosen, who is using some copper phosphate, supplied by us, in an experiment near Rogers, told me that there was some indications in this experiments that copper phosphate was effective in controlling the ravages of the fire blight organism."

G. A. Meckstroth, Chadbourne, N. C.

"This season has been very discouraging for growers from the standpoint of yield as well as price," he comments in his report for the week ending May 19th. "On account of the dry weather, the plants failed to make the normal fall growth, and the plants also suffered from the unusually cold winter. Last year the total crop of strawberries harvested in this section amounted to 180,000 crates; this year the crop will probably amount to about 80,000 crates."

Howard E. Parson, Spring Hill, Ala.

"Most of the pecans in the Schley scab control experiments have over 30 percent of the leaflets infected. There is an average of five or more spots per leaf. The percentage of leaflets infected this year is about 20 percent lower than last year. This is the reverse of what was expected because of the abundance of overwintering twig lesions on sucker growth stimulated by pruning. Difference in weather conditions this year and last must account for the difference in scab infection.

"Neither one application of 6-50 copper sulphate solution (Mar.17) in the dormant period nor one application of 4-4-50 zinc-lime mixture (April 27) lowered the amount of scab appreciably. However, two applications of 4-4-50 zinc-lime mixture (April 14 and 27) before the pistillate bloom had been pollinated lessened the amount of scab by more than half; 16.5 percent of the leaflets were infected and there was an average of only 2.2 spots per leaf. There might have been better control from one application of zinc-lime had it been made earlier. Considerable burning was caused by the zinc-lime mixture applied April 14th, but this was to the basal leaflets that are usually small. Their loss will be more than compensated for by the reduction in the amount of early scab infection.

FRUIT DISEASES

M. A. Smith, Ozark Fruit Disease Laboratory.

"Apples are making a very rapid growth," he reports on May 26th. "To date apple scab infection of foliage is very light throughout the Ozarks section of Missouri. Peach leaf curl was very abundant this spring in many orchards. Considerable fire blight has been noted in some orchards.

"On the 14th and 15th, 1.25 inches of rain fell at Springfield and in the vicinity. Crops are not yet suffering from a lack of water but the subsoil moisture has been greatly depleted this spring and more rain will be necessary very soon."

Paul W. Miller, Corvallis, Ore.

"Field studies of the bacterial blight disease of filberts were also carried on during the week," he says in his report for the week ending May 19th. "A blight epidemic of serious proportions has developed in an 8-year-old Barcelona filbert orchard near Newberg, Ore. The disease is attacking buds and aerial branches of current growth, causing a browning and death of the affected parts. The serious aspect of the outbreak lies in the fact that cankers are being formed on older branches at the base of infected buds and twigs, causing in many cases a girdling of the older branches followed by a breaking of the branch at the point of infection....Studies made thus far indicate that meteoric water has probably been responsible for the spread of a large part of the blight in this planting....

"Leaf scorch of walnuts is becoming prevalent in certain Oregon orchards in the Willamette valley. It is most abundant in plantings situated on land which is known to be ill adapted to the best growth of walnuts. Studies of the cause of this disorder further indicate that the trouble is non-parastic in nature."

CABBAGE YELLOWS

L. M. Blank contributes to the March 1 issue of the Journal of Agricultural Research a paper on "Uniformity in Pathogenicity and Cultural Behavior Among Strains of the Cabbage-Yellows Organism," describing a study made jointly with the University of Wisconsin. Dr. J. C. Walker helped by suggestions and advice during the course of this special study, and in the preparation of the paper. The data presented makes it safe to assume that specialization is not a vital factor in the program of selection and breeding for resistance to the cabbage-yellows pathogene.

FRUIT AND NUT PRODUCTION

The Soul of Wit ! Ye Editor is constantly being--no, no, not surprised--keenly gratified at the all-around efficiency of the members of our Division staff, not alone in their specialized fields, you understand, but in collateral activities. For example, during the recent celebration at Riverside, Calif. of the 61st anniversary of the planting of the two parent Navel Orange trees there by Mrs. Eliza Tibbets, it was decided to present to the Brazilian Consul at the pageant dinner a small decorated basket of fruit from the surviving Navel parent tree. A. D. Shamel made the presentation and said, according to the newspaper reports:

"Senor Consul:--In 1871, an orange grower at Bahia, Brazil, presented to the United States Consul at that place twelve young Navel orange trees as a gift to the United States Department of Agriculture. In 1873, the Department sent to Riverside, Calif. two small Navel orange trees that had been budded directly from the Brazilian introduction. From these two parent trees a large industry has arisen that is founded upon the superior commercial and eating qualities of the fruits of this variety that originated at Bahia. It gives me great pleasure to present to you on this occasion a basket of Navel oranges picked from the surviving parent tree yesterday, as a small token of appreciation from the Navel orange pageant committee for the great and friendly service rendered by Brazil. We trust that you will accept this gift in the spirit in which it is tendered. We highly esteem your personal cooperation during last year and this spring in this outstanding celebration and trust that we may have the pleasure of your continued participation in this memorable event."

Speaking time: Two minutes! We are going to send a copy of that presentation speech to the cynic who insisted that he had never heard a speech of any sort which was not too long! He, of course, was thinking of the old timers, not the modern and up-to-date representatives of this Division! Incidentally, there appears to be something in a name, after all, for you will note that it is A. D. Shamel, not B. C.!

The Riverside papers estimated that 100,000 people saw the street parade in connection with this Riverside celebration, while 450 attended the anniversary dinner at Mission Inn, and more than 3,000 were at the dance that evening at the memorial auditorium. These figures represent a large increase over the attendance at last year's celebration and indicate a healthy interest in the celebration.

The papers also stated that Fullerton, Calif. in the heart of the Valencia orange district of Orange County, had announced a similar pageant of the Valencia orange, to be held early in June, this to be modeled along the lines of the Riverside Navel orange celebration.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"Last Thursday, May 17." he writes under date of May 21, "I took some buds of the Van Duine apricot limb variant to the Armstrong Nurseries for budding on apricot seedlings. This variant, as briefly described in previous reports, is an early maturing one and apparently resistant to delayed-foliation or prolonged dormancy, as it is sometimes called here. On Thursday the fruits of this variation were ready for harvest while the normal ones from the parent tree were at least two and possibly three weeks later. The fruits of the limb variant weighed approximately two ounces each, while the normal ones weighed only about one ounce each. The early maturing fruits were in good eating condition and typical Royal fruits so far as we could judge, while the normal ones were hard, green and not edible as yet.

"The leaf characteristics of the limb variant differ from those of normal leaves in several respects and indicate strongly that we have a true bud sport. The shape of the leaves of the early-maturing limb variation is more flattened or oblate than that of the normal ones. The serrations of the apparent sport limb are much larger, more bluntly rounded and deeper cut than those characteristics of the normal leaves. I obtained a good picture of the fruits and leaves showing their characteristic differences clearly. I am rather strongly convinced now that we have in this apricot variation an important addition to our list of sports that are both of scientific interest and commercial value....

"The conspicuous delayed-foliation condition of the peach, apricot, plum, cherry, walnut and pecan trees in southern California is causing considerable discussion here on the part of those engaged in those industries. We have kept records in a Lovell peach orchard in the Cucamonga orchard for several years and probably have the only reliable data available on this condition as affecting peaches for a considerable period. It has occurred on the average about every other year in our experience but is more severe in its effects in general this year than for the past five or six seasons. Fortunately for use, our Merced experimental plot is reported as in good shape and bearing heavily."

C. L. Smith, Austin, Tex.

"The nut case-bearer is beginning to show up in considerable numbers in this vicinity, but we are yet unable to determine whether there will be a heavy infestation of this first generation," he writes for the week of May 7-12. "There is a very heavy blossom on all varieties except those that had extremely heavy crops last season."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"Several hundred Visking bags were made from casing tubing for bagging pecan clusters in connection with our studies on dropping of pecan nuts," he wrote on May 19th. "It is hoped that these bags will prevent insect damage and infection by diseases so that the only nuts which drop will be as the result of physiological conditions."

He had written on May 12th: "There is some evidence that girdling pecan trees at bloom or at about the time growth in length ceases results in larger nuts being produced and in somewhat heavier bloom the following year. In order to more fully determine the effects of girdling pecan trees on the size of nuts produced, a number of filler trees were girdled in the McCord-Simpson orchards during the week...."

"A more careful check was made during the week on the blossoming of pecan No. 7191. This variety is apparently very closely related to Success, since the appearance of the blossoms resembles Success quite closely. Pecan 7191 seems to come into bearing as early or earlier than Success, Moore, or Moneymaker, as there were a few nuts last year on the Pecan No. 7191 trees planted in January 1929, and these trees have as heavy if not a heavier bloom this year than Success, Moore, or Moneymaker planted at the same time. Last year the Success nuts produced on the station were practically worthless because of poor filling, while the nuts produced on the Pecan 7191 trees were filled from fair to excellent and a great deal better than Success grown under similar conditions."

C. F. Kinman, Sacramento, Calif.

"The effect of this spring's protracted drought in the southern part of the State is very striking," he writes May 22, "and the results of delayed foliation there is more serious than I have witnessed in that region before."

"Considerable time has been spent in peach thinning experiments with striking results already secured. The percentage of fruit with split pits for at least one variety on May 14th for close, moderate, and wide spacing of fruit was 2.6, 21.2 and 32.5, respectively."

"The warm, moist spring weather with the accompanying brown rot has resulted in very serious loss to cherries in the Sacramento Valley and prune and plum fruit and twigs in this district have also been badly affected by this disease."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Notes were made on the apparent injury on the different varieties," he writes for the period May 21-26, and referring to grape leafhopper control efforts. "Variety infestations occurring in order of severity were as follows: Panariti, Black Monukka, Muscat Hamburg, and Sultanina. Of the stocks growing ungrafted the Riparia Gloire stock showed the most infestation. The vinifera varieties growing on their own roots, in general, showed more apparent injury than when the same varieties were grafted on vigorous resistant stock roots."

"Important growers were contacted in Kern County and vicinity to study their methods of leafhopper control and the apparent results. Various methods are being used. Some of these are as follows: Pyrethrum oil spray, Nicodust, cyanogas, and various combinations of the same. The Pyrethrum oil spray is used mainly to control or kill the overwinter adult in early spring before they start laying eggs. This is usually when the shoots of the vines are 8 to 12 inches long. Nicodust is used to kill the early stages of the nymphs and cyanogas for later nymph stages and any adults which might be present. Covercrops are planted in the fall in some cases between the vine rows as a winter catch crop and the covercrop is sprayed in early spring with cyanogas or pyrethrum oil before the adult overwinter hoppers migrate to the vines. Considering various factors of application and costs, the best method of control seems to be the application of Pyrethrum oil spray for the over winter adults and the nicodusting for the early nymph stages, or some other form of dust as the cyanogas."

J. L. Pelham, Robson, La.

Writing on May 26th, he reports: "During most of the last two weeks, rain has fallen almost daily, keeping the ground so wet that it has been impossible to accomplish any field work. A total of 4.29 inches of rainfall was recorded for the period. Although the rainfall has prevented work, the place was so clean of grass at the beginning that it is not suffering."

B. G. Sitton, Shreveport, La.

"Continued recording set of pecans on trees partially defoliated last year," he writes May 26th. "Trees having no crop last year have a fair crop this year, but those having a heavy crop last year have very little this year. The Stuart crop is light over the entire North Louisiana section, according to reports."

HORTICULTURAL FIELD STATION

A. C. Hildreth, Cheyenne, Wyo.

Writing on May 26th he says: "Spirea still in bloom and the iris opening up slowly--there should be a good display of the latter by Memorial Day. The lawns have been mowed and irrigated and the window boxes filled in the greenhouse, to be set in place next week...."

"Sweet corn planted the middle of the week. Onion and celery plants set out. Completed the systematic planting of tomatoes, peppers, and eggplant as well as the hardening off experiment with tomatoes and cauliflower. Plantings made in the variety test of cabbage, cauliflower, broccoli and Brussels sprouts. Orach (Gartemald) planted for seed. A small planting made in the irrigated tract of perennial spinach and large-leaved sorrel. Honey June, a new variety of sweet corn from the Texas Agricultural College, planted below the reservoir in Section 9. Tomato, cabbage and pepper plants were sent out the latter part of last week to cooperators in Wyoming and Nebraska."

The report for the week ending June 2d says: "The iris beds are now at their best; peonies, oriental poppies and roses in bloom. Breeding work under way with roses. Flowering annuals being set in lawn beds and borders. The window boxes were placed on the buildings the 29th. Mr. Wm. DuBois, architect, of Cheyenne, from whom many of the iris were obtained, came out the 29th and labeled the varieties."

"Raspberry and strawberry plants and orchard trees irrigated. Some ripe strawberries were gathered June 1. All plantings, including seed blocks, orchards, shelterbelts and ornamental groups have been cultivated. Tubbed fruit trees moved from the greenhouse to the field on the 29th."

TRUCK CROP DISEASES

W. D. Moore, Charleston, S. C.

"Downy mildew. Downy mildew has begun to develop on the cucumber plants throughout this section, but will probably not do very much damage due to the stage of harvest at this time," he writes on June 2d.

"Lima bean growers in the Kingstree and Lake City sections are experiencing considerable trouble at present from an unusual outbreak of Thrip in the blossoms. To date a very poor set of fruit has been had, due to the shedding of both blossoms and young pods."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

Commenting on activities at the station for the May 7-19 period, he writes: "The last withdrawal and examination of Delicious apples was completed. Most lots from the third picking, while having a firm crisp texture, had either a neutral or stale flavor. This also applied to Golden Delicious, the last picking of which during December and January had a markedly superior flavor to either the first or second pickings.

"The late withdrawals of Delicious are showing that Richared and Starking mature a few days earlier than Delicious. This has been observed when the three varieties are harvested from the same orchard, but is made a little more conclusive this year when the three varieties were picked from the same tree.

"The weather has continued with moderate to low temperatures for the season with more than an average number of days cloudy or partially cloudy. The weather has been favorable for the growth of apples but has held back the emergence and egg-laying of the codling moth, making it difficult to decide when to apply the ovidial spray. The season is such that most orchards about Wenatchee will require five cover sparys for the first brood."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

"We have progressed very rapidly with the planting of the experimental plots," he writes May 19th. "The yield test, miscellaneous variety collection, South American varieties, and increase plots of the older seedlings, also the cooperative mosaic resistance and blight resistance tests have been planted.

"Weather conditions have been favorable for farm work and the commercial growers in this vicinity have made good progress with their planting."

W. C. Edmundson, Greeley, Colo.

Writing on May 24th he says: "The weather during the past week has been very hot for this time of the year. Today, however, it is cloudy and cooler. We have had no rain lately, soil is very dry, and all crops are badly in need of moisture. Grain that has not been irrigated is in very poor condition. The young alfalfa is withered and some has already been lost.

Sugar beets have been slow to germinate and many growers are irrigating up their beets at this time. The early potato crop is in fair condition. Fusarium wilt has caused considerable seed to decay and in some fields plants have become infected after germination."

ADMINISTRATIVE NOTES

Separate Vouchers
for Authorization
and Appointment
Payrolls.

In submitting payrolls for employees serving under appointment and those hired under letter of authorization, it will be of great assistance to our Business Office if you will place all employees hired under authorization on one payroll and those serving under appointment under another. Different clerks in our Business Office handle these two types of payrolls and a different procedure is followed in preparing them for payment. Consequently, delays in handling the rolls are always experienced where both types of employees are listed on one roll. This can be avoided and checks will reach your people quicker, if you will use separate vouchers for the two classes of employees.

SPECIAL ADMINISTRATIVE NOTICE

Transfer of Disbursing The Department of Agriculture's Disbursing Office was transferred to the Treasury Department on June 1, and hereafter checks in payment of salary and expense accounts will be handled by the Treasury Department instead of by the Department of Agriculture.

The Department's Cashier's office, too, has been closed, so that it is no longer possible to follow the former plan of having checks held for delivery at the Cashier's window. In future all payrolls must carry employees' addresses, and checks will be sent as directed to the payee's home address or his office address.

In view of this new arrangement, it will not be practicable for us to secure checks covering advances of funds for traveling expenses quite as promptly as we have been able to do in the past. It will therefore be necessary to submit applications for such advances of funds to our Business Office at least five days ahead of the date on which the money will be needed.

Assignment blanks authorizing deposit of salary in banks must be in the possession of the Business Office at least by the 10th or 25th, respectively, as it will be impossible to make these arrangements where they are not received by those dates.

ADMINISTRATIVE NOTES

The Office of Personnel and Business Administration has notified us (P. B. A. Circular No. 258, dated May 25, 1934) of amended rules covering the forwarding of telegrams:

"The Western Union Telegraph Company and the Postal Telegraph-Cable Company have amended their rules, as indicated below, to permit the forwarding without charge, under certain conditions, of telegrams which are undelivered at the original point of destination:

Forwarding 'Paid Messages.--No charge will be made for forwarding
Telegrams. any paid message received at original point of destination over commercial telegraph lines, when it is forwarded under instructions furnished by the addressee, or is automatically forwarded by the handling company in accordance with information obtained by the company.

'Under these conditions, payment to the original point of destination will provide for forwarding without additional charge.

'Collect Messages.--No additional charge will be made for forwarding any collect commercial message received at original point of destination over commercial telegraph lines, when it is forwarded under instructions furnished by the addressee, or is automatically forwarded by the handling company in accordance with information obtained by the company.

'The amount of the collect charge will be the cost from the point of origin to the point of actual delivery.'

"These charges," the P. B. A. Circular points out, "do not provide for the free forwarding of messages on which the sender changes the point of destination after an unsuccessful attempt to make delivery at the original address.

"To secure the maximum savings resulting from these changes in procedure, all employees in a travel status, or employees who have changed official stations, should furnish forwarding addresses to the telegraph company, their hotels, or the last residence or business address."

These modifications should be given careful consideration by any employee likely to be affected, and immediate steps taken where necessary to supply forwarding address to the telegraph people, or the last residence or business address.

PLANNING A SUBSISTENCE HOMESTEAD

Farmers' Bulletin No. 1733, "Planning a Subsistence Homestead," promises to have an influence far surpassing most of our publications. The Superintendent of Documents, Washington, D. C., is selling it for 5 cents a copy, and its 19 pages of text and plans just about answer any question the average person might ask concerning part-time farming. The bulletin, of course, is intended for those who would like to engage in part-time farming as a means of supplying the family with garden foods.

I believe our colleague, Mr. W. R. Beattie, has contributed a very important part to this publication in working out the detailed plans for garden and fruit production on small acreages. The bulletin as a whole was put together by Walter W. Wilcox, junior agricultural economist of the Division of Farm Management and Costs, Bureau of Agricultural Economics.

"Enough vegetables and small fruits can be raised on one half to three quarters of an acre of good land to furnish a family of five with all they want during the summer and with plenty for canned, stored, and dried products for the winter," says the bulletin. "These small fruits and vegetables, together with a small poultry flock and a few fruit trees, are all that can be cared for properly by the ordinary family without a horse or garden tractor," it warns, "if the man is chiefly employed in some other job during the growing season."

"Growing food for family-living purposes in connection with enough outside work to provide the family with the cash for necessary farm and family expenses in a combination that many families now want to develop. Recent hard times and still more recent Governmental policies have renewed and intensified interest in this possible combination. This kind of farming has often been called subsistence farming and a farm of this kind a subsistence homestead."

The bulletin is so practical in its suggestions and planting plans that one is led to hope that it does not meet the fate of a bulletin on chicken raising discussed in a recent fiction story in one of the farm journals. Some crooks copied the text of the 5-cent bulletin, had equipment built according to plans given, and sold it for \$28.50 the set--pluss an inexpensive brooder. Their defense when caught up with was that people appreciate more information costing \$28.50 than that obtained in a bulletin costing but 5 cents!

At any rate, here is \$100.00 worth of information for 5 cents--and the fruit and vegetable part of it is worth at least, say, \$62.00!

Vol. 6, No. 12

June 15, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I--M O N T H L Y N E W S L E T T E R .

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final words on the subject.

Vol. VI

Washington, D. C., July 2, 1934

No. 13

Snow! "A light snowfall whitened the trees in the foothills surrounding the Valley." Delightful words to meet the eyes of your editor as he prepares copy for this issue of the NEW LETTER during one of Washington's typical hot spells, with the thermometer registering 99-44/100 degrees in the shade--and you can wager that is where he is, in the shade.

This snowfall report is authentic. We have it in the weekly report of W. W. Aldrich, from Medford, Ore., dated June 11, 1934. A light snowfall in June may not be first page news in the Rogue River Valley, but my sympathetic nature impels me to place it here so that it may catch the eyes of my Washington associates at once--with, I trust, a satisfactory mental reaction. We are not only battling with the heat--and humidity--but with the vexations of moving, as the Division is now pretty well housed under one roof--in the new South or Extensible Building of the Department.

"A light snowfall whitened the trees in the foothills surrounding the Valley," says the report, "while about .8 inch of rainfall added some moisture to the upper foot of soil. In the lighter soils this rain will add seven to ten days water supply for the pear trees. However, this direct benefit was partially counterbalanced by appreciable losses to the cherry and strawberry growers."

A light snowfall whitened the trees... It was an act of Christian piety to send in a report like that at this season!

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore. (continued)

"On Sunday, June 3, we received a brief visit by Secretary of Agriculture Wallace, who, together with Dean Schoenfeld, Director of the Oregon Agricultural Experiment Station, spent sometime examining the older irrigation plots. Another visitor during the week was Dr. E. L. Proebsting of the University of California, with whom I spent a day going over the station and representative orchards of the Valley. On Friday, Mr. Lloyd Ryall came down from Yakima to transform the cellar under the new Bureau of Plant Industry laboratory into a pear-ripening room."

He had written late in May: "I have completed the tabulation of bloom records for the ringed limbs thinned to 10 and 100 leaves per fruit in 1933. The curves plotted from these data show results very similar to those obtained in 1932 by Harley and Masure for Delicious apples. My pear data show that fruit-bud initiations began about mid-June, but most of the differentiation occurred between June 13th and July 15th. To my surprise, initiation of lateral and terminal blossom-buds on shoots occurred at the same time as did blossom-bud initiation on spurs.

"Examination of the Comice trees thinned to 100 leaves per fruit shows that in spite of the heavier bloom on the thinned trees the fruit drop is much less than on the check trees....Examination of Bartlett, Anjou, and Comice trees which showed "Little Leaf" symptoms in 1933, and received zinc-sulphate limb injections in February, 1934, shows absolutely no improvement in the little-leaf condition. At present I am not certain how to interpret these results. Apparently the observed tree condition is not "true" little-leaf."

"During the week, "he reported on May 14th, "John Grim, with the help of from four to seven laborers, completed the root excavations at the Clancy orchard. I have tabulated the results of the root weighings and have found three outstanding features:

(1) The weight of roots per cubic foot (termed Root Concentration) was much less than in the clay adobe soil at the Station. Although part of the soil profile of the 'Medford loam' contained about 30 percent clay, most of the soil did not have more than 15 percent clay.

(2) The root concentration midway between the tree rows was as great as that close to the trunk of the trees.

(3) The soil was 9-1/2 feet to bedrock, and only 67 percent of the roots were in the top four feet. Below four feet the root concentration decreased gradually to a very low concentration in the lowest nine inches."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore. (continued)

May 7th: "In my report two weeks ago I expressed some fear that rain might accelerate the blight development. We have had almost daily light showers for the last 10 days, and blight infections have spread rapidly. However, most pear growers here are well aware of blight danger, and have had one man for each fifteen acres or more constantly patrolling to find new points of infection. As a result, in most orchards blight is well under control.....

"The heavy winds during the past week have resulted in noticeable injury to the new shoot growths. The lashing and whipping of these shoot growths by the wind has caused entire shoot growths to blacken, and the leaves to turn black and shrivel. This type of injury is rather unusual here, but frequently occurs in the Santa Clara, Calif. pear district."

H. L. Crane, Albany, Ga.

"The activities of the entire staff during most of the week were devoted to field work in connection with our studies to be made of the drop of pecan nuts this summer. Several hundred clusters of pecan nuts were labeled and bagged in each of three orchards, namely: Albany Peach and Pecan Company, McCord-Simpson, and the U. S. Pecan Station. In all cases only the variety Schley has been used as this variety has in the past years dropped a larger percentage of the nuts than other important varieties such as Stuart or Moore.

"The work of securing a record of the pistillate bloom on the trees in the various experiments under way at this station was practically completed during the week.

"Already there has been a heavy drop of blossoms or young nuts. Examinations made during the week show that this early drop has been most pronounced on weak trees of those suffering from a lack of nitrogen, although applications of nitrogen-carrying fertilizers, made for the first time about April 1st to such weak trees, failed to decrease this drop to any appreciable extent, if at all. Strongly growing trees that blossomed this spring show a good set of nuts in the clusters, with only the very weakest blossoming shoots shedding the young nuts."

Report for the week ending May 26, 1934.

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

"We have completed selecting and thinning 100 fruits in each plot, making 400 fruits in all for periodic measurements," he writes on June 7. "These apples were selected carefully for uniformity in a manner similar to that employed last year. The growing season is quite advanced in respect to date. The fruits now average about five inches in circumference.

"The cherry harvest is fairly well along. Prices are considered fairly good, eight cents a pound for Extra Fancy, although the crop is in general rather light due perhaps to the cold weather at pollination time. As a result the cherries are quite large and the quality is excellent. We have had several showers and the growers are afraid of the fruit splitting but fortunately the sky remains cloudy after each rain and very little damage has been reported so far."

On May 30th he had written: "We have just completed thinning sixteen trees in our soil moisture and nitrogen plots to 30 leaves per apple. In this we have not limited our leaf to fruit ratios to single leaders but have applied it to the whole tree. We are doing this not because we feel that the single leader measurements were not accurate, but in order to get sufficient fruits for the number of measurements desired it was necessary to thin the entire tree...Nine pounds of nitrate of soda per tree were applied to the trees in the wet and dry plots. Our entire plots consist of 45 trees, including the guard rows, sixteen trees being used for fruit measurement studies. We plan to irrigate all plots in a day or two, after which the dry plots will receive no further irrigation until the wilting percentage is approached."

"The cherry trees in the Wenatchee district have this year shown a considerable amount of leaf mottling," comments the report dated May 23d. "In some cases the disease is quite severe and a number of large apparently otherwise healthy trees have had to be removed. The appearance of the trouble in the early stages resembles a light mosaic, while in the later stages the leaf turns almost yellow and crinkles. Specimens were sent to different workers in California to determine if it was true "cherry crinkle," but they in all cases reported that it was not.

"Inoculation tests so far have been negative, although it appears in the orchards to spread from one tree to another. The only variety so far noted to be severely affected is the Bing, although one tree of Royal Anne showed evidences of it. Lamberts appeared to be quite immune. This trouble was noticed a few years ago for the first time and since many of the apple trees in the same orchard showed some "little leaf" condition, we attributed the cherry mottling to possibly the same cause. However, this year it is showing up quite generally and not necessarily associated with "little leaf."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"Some weeks ago a gentleman from Cucamonga, Calif. called on me for information concerning Marsh grapefruit," he writes under date of June 4th. "Incidentally, he mentioned the occurrence in one of his Lowell peach trees of a limb that was fully foliated and bearing a normal crop, while the remainder of the tree, as well as the other trees in the orchard were badly affected by the prolonged-dormancy condition and without hardly any leaves or fruits.

"Last week we visited the orchard and found the tree with the limb variant, in fact there was no difficulty in finding it because the limb in question stood out very conspicuously from any point in the orchard. The trees were almost barren of foliage at this late date while the limb variant was apparently normal both as regards foliage and fruit. Only about a half-dozen peaches could be seen in the trees of this ten-acre block, while we counted fifty-six on the limb variant. We cut two budsticks from the limb variant and had the Armstrong nurseries use them for a progeny test. The owner of the orchard also promised to topwork one of the neighboring trees with buds from this limb.

"One of the reasons why we are inclined to believe that this may be a limb sport that is resistant to the prolonged dormancy conditions, is the fact that a secondary branch on the apparently normal limb has the typical prolonged dormancy appearance. The normal condition of the main limb extends both below and above this affected branch. It is a very interesting study and similar in many ways to the apparently resistant limb sport in the Royal apricot in the Cabazon district that I described in a recent report. In both of these instances it will be possible to obtain progeny readings soon as a result of the "June" budding by the Armstrong nurseries.

"A survey in several typical citrus orchards near here last week showed that the Washington Navel orange set is a relatively light one, but the Valencia orange, Marsh grapefruit, Eureka and Lisbon sets, are unusually heavy ones. The avocado set is the heaviest for some years in the trees of the Fuerte and Pueblo varieties examined recently. The deciduous-fruit crops are almost total failures here and the walnut crop also appears to be light in quantity and of inferior quality as a result of the prolonged dormancy and perhaps other conditions arising from the warm-winter and lack of normal rainfall.

He had written late in May: "Our girdling experimental tests as well as our citrus pruning experiments have been of great value to growers. The practice of citrus tree girdling has been practically abandoned in California and Arizona as a result of our studies. The severe pruning of normal citrus trees, commonly practiced in California and Arizona before the results of our studies were known has also been largely abandoned in commercial orchards in the southwest. There is no question as to the commercial value of these studies and one of the most important factors in their efficiency has been the individual tree performance records of the comparative tree treatments."

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"The weather has changed now to very hot temperatures," he writes on Jun 9th. "Strong winds are blowing which are drying out the soils very rapidly. One orchard that has been irrigating usually in July is showing conditions now that would indicate the necessity of irrigation at once. The cool weather that we have had with occasional light showers has made the growers believe that there is an abundance of moisture. Surface soil shows this to be the case, but the subsoils in many cases are very dry."

"The prospects now are for a good filbert crop and apparently for a good Franquette walnut crop. Seedling walnuts are spotted but there will be a good seedling walnut crop on the whole, unless a heavy drop occurs or some unforeseen condition arises," he had reported for the May 21-June 2 period. "There should be the biggest total nut crop that we have had in this State."

George F. Waldo, Corvallis, Ore.

Writing on June 9th, he says: "During the past week we have been busy with selecting both strawberries and raspberries. We finished making selections on June 7, the first selection being made April 24. We also finished testing former selections for canning and preserving. Most of the time, however, was spent in selecting promising bramble seedlings, mostly of purple, red, and black raspberries, and crosses between Zelinski x Logan. The Zelinski is a selection of Rubus macropatalus, the common trailing blackberry of the Northwest. Although these seedlings are only a year old they are growing quite vigorously and many show some promise because of their fine quality."

Charles L. Smith, Austin, Tex. (Texas pecans)

"The trees are making very rapid and satisfactory growth so far this season," he writes on June 2d. "However, unless we have rain some time soon it will, no doubt, be necessary to water the trees in order to maintain a good growth. Hamilton's time was consumed in general routine work and on the rosette experiments in the Lucas grove where he did spraying and trunk injections with zinc sulphate."

"At Austin, further checks on dropping of nuts were made at Pearce farm and in Barton's grove. We are finding a very heavy drop at the present time due to nut case-bearer. It is apparent that the infestation of this insect is going to be heavy in this area, and it appears that they are starting work somewhat later than usual."

FRUIT AND NUT PRODUCTION

Charles L. Smith, Austin, Tex. (continued)

Commenting on activities during the week of June 4-9, he says: "Smith accompanied Alban on a trip to Mann's orchard at Georgetown, to Sterns' orchard at Taylor, and to the Bexas County Farm at San Antonio, to inspect the conditions of the trees in the rosette experiments in order to make a progress report on this work at the Texas Pecan Growers' Association meeting. The trunk injections in the Lucas grove at Brownwood so far have shown very little results, but at the Bexar County Farm at San Antonio the results are very striking since there has been a very great improvement in practically all of the trees treated in this way."

E. V. Shear, Hood River, Ore.

"Mildew is increasing on apples, but very little has come to attention on pears," he writes the latter part of May.

"Calyx and later sprays on pears and apples are continuing to show increased injury. The worst injury is from liquid sulfurs, dry-mix showing only traces. Lime-sulfur injury varies from a trace to nearly total ruination of fruit and foliage, the severity being exceptional. All pear varieties show injury, Comice and Anjou generally worst."

Elmer Snyder, Fresno, Calif.

"The Oakville Experiment Vineyard was visited during the period," he reports for May 28-June 9th period. "Of 228 vinifera varieties budded last fall in a varietal collection and maintenance plot, at this time 91 percent of the buds were growing with a possibility of more buds starting later. Only 6 buds out of 456 counted were actually dead."

"Leaf hoppers which were active earlier in the season at Oakville were apparently controlled by nicodust applications. Over three inches of rainfall were recorded the week previous to this report. The rain caused some damage to cherries but was quite beneficial to young vineyard plantings. A considerable acreage of resistant stock vines was planted in the Napa Valley this spring to be budded to wine varieties this coming fall."

"The vine growth this year is better than normal in the Experiment Vineyard and in general in the vineyards in Napa Valley. The crop is fully up to normal with a better setting of berries on the clusters than usual. The young stock planting is making fine growth and will be in excellent shape for budding this coming fall."

PLANTING LATE GARDENS TO FOLLOW DROUGHT

"Drought has ruined many farm and home gardens in the Central West, but it is not too late, even now," says W. R. Beattie of our Division, in a press announcement released on June 20th, "to plant late gardens that should yield a quantity of good food for summer, fall, and winter. Tomatoes, late cabbage, celery, potatoes, snap beans, and turnips are staple garden crops which, if planted soon, should give returns if there is normal rainfall during the remainder of the season. It may also be possible to grow fall crops of spinach, kale, snap beans, broccoli, peas and turnips. The important consideration in this whole matter of planting garden seeds under dry conditions is to have the soil rather firm so that the moisture that it does contain will rise to the surface."

The release gives somewhat detailed instructions for handling different plants to meet the emergency conditions, and should prove exceedingly helpful to many who have been hard hit by drought.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"Doctor Wiant visited us the last of May, spending part of a day looking through the few packing houses now operating in shipping plums, apricots and peaches," he writes under date of June 15th. "Doctor Wiant also drove through the vineyard section of Fresno county."

"The season continues to be about three weeks early, with grape shipments moving from the Coachella Valley the last of May. Shipments are expected from Kern County by July 1st. The opening prices have been higher than those of last year."

"Early potatoes have been moving from the Shafter district in the southern San Joaquin Valley for some time, and it is estimated that about 2800 cars will be shipped this year. On a visit to the district last week, washing the potatoes was found to be the general practice preceding sorting, grading and sacking. The Paramount Washer, provided with under-brushes and side brushes, the latter made of rubber, was the washer in common use. This is the same washer used generally in the Stockton district and is manufactured in Stockton, Calif."

Ways the Garden Philosopher: It's a lot easier to get the chickens out of the garden, than to get the garden out of the chickens.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

In a report commenting on activities and observations for the period from May 21st to June 9th, he writes: "On June 1st observations were made on Delicious and Winesap apples which we had stored in wooden cases (as checks) and in fibreboard cartons of five different types of construction.

"After being held at a temperature of 65 degrees for five days, a re-examination of the fruit was made. The only significant difference between the fruit in wood and fibreboard was in the lesser number of bruises in the latter. This, however, was important.

"The flavor of the Delicious in the fibreboard was a little more full than in the wood, but after five days in the ripening room the difference could not be detected. After ripening there was no bad flavor in any of the fruit.

"The first cherry shipments started during the last week in May, most packing houses starting in earnest on the day following Decoration Day. The fruit is of its usual high quality and on account of the smaller crop, sizes are large. During the past week showers have threatened nearly every day, but as yet rains have not been sufficient to cause cracking. Growers have been paid five cents a pound for Royal Ann, and eight cents for Big and Lambert varieties.

"We anticipate rather heavy residues of lead arsenate on 1934 apples as many growers already have five cover sprays applied. The first brood is now practically all out. There seems to be less evidence than usual of worms in the orchards at the present time. During April and May after every warm period we would have a week or so of cool weather which was unfavorable for egg laying and also for quick hatching. No doubt there will be sufficient worms get through, however, to necessitate the application of second and possibly third brood sprays by many growers.

"Until June 8th, North Central Washington experienced only two or three warm days. For days at a time during late May and early June skies partially cloudy and moderate (seasonally cool) temperatures have prevailed."

FOR SALE: Good Dairy Farm. Plenty of cowslips, milkweeds and buttercups.

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

Writing of the May 16-31 period he says: "The precipitation at Vincennes during the period covered by this report was only .02 inch. The total for the month of May was 1.76 inches, a departure from normal of -2.71 inches. The departure from normal since January 1st has now reached a total of -11.21. On account of the moderate day temperatures and cool nights which prevailed for the most part during the latter half of the month, crop damage has been slight, excepting to wheat, oats and to potatoes. The lack of sufficient moisture has reduced the prospective yield of wheat by at least 50 percent, while the oat crop will be a total failure, excepting a few fields of low bottom land. It is the general opinion that the potato crop will be worth harvesting. One of the worst features of the protracted drought is that wells and other sources of water supply are beginning to fail. A number of the apple growers in the section are complaining of a shortage in the supply of water for spraying purposes.

"The outbreak of twig blight mentioned in a previous report is now showing on practically all of the commercial varieties of apple in the section. Blight has caused a serious reduction in the crop in several plantings of Johathan. The damage from twig blight to other commercial varieties is from a trace up 5 percent. The disease is showing on Rome Beauty in the form of blossom blight, in addition to the twig infection, this variety having been in bloom at the time the greatest amount of infection occurred. In one planting of Rome Beauth the disease has destroyed at least 75 percent of the crop of fruit. The damage in several other orchards is from 10 to 50 percent."

DISEASES OF TRUCK CROPS

W. D. Moore, Charleston, S. C.

"The final result of the trucking industry of this section points at this time to an adverse financial position for practically all farmers," he comments on June 16th. "The spring cabbage crop was practically a total loss from a money standpoint; the bean crop did little more than pay its way, due to excessive plantings; and the potato market was very weak, even in view of only an average yield. Many growers are quite frank in saying that some radical adjustment will have to be made in the matter of crops and planted acreages if the industry is to survive in this section. Numerous growers in this area who were in excellent condition five years ago are today bankrupt or nearly so."

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"Our pecan scab spraying has become extremely complicated and difficult," he writes in his report for the March 26 - June 2, period. "A spray suitable for spraying pecans must conform to the following requirements: (1) It must serve as protection against fungus infection; (2) it must not increase black aphid infestation, and (3) it must not accentuate drouth injury. Bordeaux mixture furnishes protection but favors aphid infestation and increases drouth injury; while, on the other hand, sulphur compounds give poor protection but do answer the requirement for 2 and 3....

"Zinc sulphate spray as a cure for pecan rosette has given wonderful results so far this season. Trees sprayed this season that rosetted so badly last year that all the current year's growth died, are today entirely free of rosette signs and are making an excellent shoot growth among the dead last year's twigs....

"Scab is more abundant in old neglected orchards than I have observed since 1929; on the other hand, scab is light to moderate in orchards that have been sprayed regularly during the past few years. Mr. Slater Wight, Cairo, Ga., reports a very heavy infection of scab on the variety Frotscher. That variety heretofore has been considered one of the most resistant ones in the Southeast, but is known to scab badly in central Louisiana."

SWEETPOTATOES

Ross C. Thompson discusses size, shape, and orientation of plots and number of replications required in sweetpotato field-plot experiments, in the Journal of Agricultural Research for March 1, now being distributed.

Before any extensive field experiments with a crop are made, he points out, it is important that the size of the plot and the number of replications required to give accurate results be ascertained. In the spring of 1929, the experimental work outlined in the paper was begun for the purpose of determining the size and shape of plot and the number of replications necessary to reduce the error in plot experiments with sweetpotatoes to the least limit possible under field conditions.

ADMINISTRATIVE SPECIAL

Since Congress has provided that employees of the Government shall be subject to a reduction of but 5 per cent during the fiscal year beginning July 1, 1934, all payrolls, including those for employees hired under letters of authorization, shall be prepared on that basis beginning on that date.

ADMINISTRATIVE NOTES

Moving Days and Picnics. Moving is no picnic, but we have had both moving days and a picnic lately. When this issue reaches you, we hope to have our entire Division housed under one roof, in the new South or Extensible building, just across the street from the main building of the Department of Agriculture.

The picnic was probably arranged to compensate for the vexations of moving! At the same time the well-attended outing gave us our first opportunity to be together at one time, though, of course, there have been social occasions local to our various sections. The picnic was arranged by a committee made up of representatives from each of our sections, and was held Saturday afternoon June 16th from 2 p.m. on at the U. S. Horticultural Farm, Beltsville, Md. The farm is easily accessible, being located on the Washington-Baltimore Boulevard about 3 miles from the University of Maryland. Some idea of its attractiveness may be gained, I imagine, from the fact that ye editor devoted so much time to touring the station that he entirely missed the "lemonade, ice cream and coffee," plus a dinner which had been provided for him by loving friends.

However, it was a picnic, being guided over the station by our expert plant propagator, Eugene May, and accompanied by Saburo Matsura, our translator of Japanese. Saburo, whose avocation is entomology, tried to get us interested in the insects and even demonstrated how they are captured efficiently, information which, I fear, will be totally useless to me. It is all very interesting, from the log cabin which served as picnic headquarters, to the various experimental plats, and buildings in progress of crection.

Amendment to the Administrative Regulations. Paragraph 487 of the administrative regulations of the Department is amended to read as follows:
"487. TEMPORARY EMPLOYEES.--Temporary employees will not be allowed annual or sick leave. Where a temporary employee receives permanent appointment leave will be treated as earned during the temporary period as if the employee had been permanent, either for prospective grant or for reimbursement of deductions on account of absence without pay during the temporary period in default of the leave status."

The purpose of the change is to give temporary employees upon assuming the permanent status the benefit of the cumulative leave provision in section 215 of the Economy Act of June 30, 1932, 47 Stat., 407.

ADMINISTRATIVE NOTES

Learn the "It is the duty of some of us to raise our products," said
Job ahead. the vice-president in Charge of Production, to employees of
the United Fruit Company, "of others to transport and sell
them, of many more to make production, transportation and sales possible.
It is the duty of all of us to find and educate the men who shall be
ready to take care of future expansion, and be prepared to assume larger
responsibility when opportunity calls.

"Present conditions call for men more alive to transition than to
tradition....to do your own work well you must know and realize the
importance of the work that others do and you must keep yourself ready
to grasp opportunities furnished by others to make your own particular
work more efficient. You must make your link in the chain strong, or
the chain as a whole will be weakened.

"The farmer who 'gets by' suffers the assistance of the agricultural
expert, the chemist, the transportation workers and the soil specialists.
The good farmer welcomes them. The excellent farmer in addition to wel-
coming them, makes definite contributions to the common objectives--more
production per unit of area, better quality at lower cost of production,
reduction of transportation costs--and thus becomes a factor in the at-
tainment of these objectives.

"I have mentioned the farmer, yet he is only one link in the chain.
The engineer, the chemist, the transportation man, the agricultural ex-
perts, the merchandise man, the stevedore, the accountant--each must be
receptive to the ideas of others to the end that his link in the chain
is strengthened. Look into this business, not at it. Consider what you
can do, first to make your own part of it more efficient, second to offer
constructive aid to others.

"Learn the job of the man ahead of you. That is the best way to
help him. He is looking for help. He needs it. He wants to raise men
who will become factors in production. He wants to raise men who will
contribute substantially to efficiency. It makes no difference where
you start; it is how you work through and how you finish. Think beyond
your immediate job and catch the picture as a whole. Once you have
caught it, you will see the men ahead of you reaching out for assistance.
To get a job done they must find the man to do it; that is always the
first step. Fit yourself to be the man they choose and sooner or later
your opportunity will come...."

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July 2, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final words on the subjects.

Vol. VI

Washington, D. C., July 16, 1934

No. 14

On Walnut Observe yon plumed biped fine! To effect his captivation,
Pollination Deposit particles saline, Upon his termination. Or words
 to that effect, according to the old proverb. However it
may be with birds, and we may depend upon the Biological Survey to at-
tend to that, in the field of horticulture California walnut growers
appear to be grasping the fact that Milo M. Wood of our section of Fruit
and Nut Production knew exactly what he was talking about when he announ-
ced that to secure satisfactory walnut yields it would be necessary to
deposit particles--of pollen--where they would do the most good.

"An excellent crop of nuts has set on all of the pollinated orchards in the Linden district," he writes in his report of June 16th from Sacramento, Calif. "In this district some growers pollinated their orchards once, some twice, and some three times. While the prospective yield is heavy, in all cases it appears that those who have pollinated more than once have secured by far the largest set of nuts, probably owing to the fact that the pistils were spread over a longer period this year than formerly.

"The Persian (English) walnut pollen seems to be the most efficacious in causing a set, although the black walnut pollens have given good sets where proper attention was given to picking the catkins at the right stage. The conclusion based on the notes thus far obtained clearly indicate that Persian walnut catkins are better for all-around pollination than the Northern California black catkins, although the latter can be successfully used in case the former cannot be obtained in sufficient quantity."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"We spent part of Friday in Tulare County with the Farm Advisor and two of the leading citrus growers and packers," he writes on June 25th.

"The citrus crop in that district seems to be relatively about the same as that in this section. The trees, however, appear to be considerably improved in appearance as compared with their physical condition at this time last season. We saw considerable evidence as to the apparent benefit of the use of zinc sulfate in some of the orchards and some cases where it had caused some tree and fruit damage.

"The Farm Advisor is quite enthusiastic as to the value of this treatment, particularly in the case of little-leaf, mottle-leaf or otherwise decadent citrus trees. He told us that four thousand acres of citrus trees had been treated this season, mostly through spraying. He is of the opinion that a zinc dusting treatment will replace the spray application in the future. The citrus picking and shipping season is over in Tulare County and there will be no more harvest until the Navel orange crop matures next fall.

"The main object of our visit to Tulare County was to study the citrus trees that have been girdled one or more times. This practice was quite general in that citrus district a few years ago and we were told that the results of our experimental studies were responsible for checking its use. At the present time but little girdling is being done, the practice having been practically abandoned.

"The Farm Advisor and the citrus growers with whom we visited the girdled trees, agreed that their commercial use of this practice in Tulare County gave the same results that we have obtained in our experimental plots. They did not have comparative girdled and un-girdled plots for observation so that they were unable to check the results. When the results of our girdling tests became known through publication in the Citrograph and other means, an investigation was made of the results of the orchard practice so far as it could be studied and as a result girdling was largely condemned. There is no doubt but that next to our pruning tests, our girdling experiments have been amongst the most useful and valuable of our studies of orchard practices by means of the individual performance record plan."

J. L. Pelham writes from the U. S. Pecan Field Station at Shreveport, La. on June 30th that no rainfall has been recorded since June 5th, and that was only 0.18 inch. The last rainfall of any consequence was on May 25th. "Crops in general are showing need of moisture, but the trees on the station do not show any apparent distress."

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"In an orchard near Merced there is a large block of peach trees that is badly affected with mildew," he writes on June 26th. "On examination it was found to be a variety that has large leaf glands. Glandless leaf varieties have mildew also but none of them appear to be as badly affected as the one with glands. Gland-bearing peach leaves have been considered to be more free from mildew and some other diseases than glandless ones.

"In Placer County, I came upon a Climax plum orchard where one or more branches of almost all trees have many small leaves that are produced in large clusters. The clustering is due to the short internodes of the current season's shoots. Crown gall appears to be responsible for the leaf condition the same as in the Kelsey orchard that I examined last spring. It appears that the presence of crown gall does not manifest itself in the leaves of some varieties as it does in others.

"It will be interesting to note the progress of the Bartlett harvest. With the exception of two days the Bartlett fruit maturing season has been cool in the day time and cold at night."

W. W. Aldrich, Medford, Ore.

"Sales of Bartletts to the canneries began this week, at a price of \$32.50 per ton, with no more than 10 per cent pears in No. 2 grade," he reports under date of July 2d. "Many growers are waiting in expectation of \$35.00 or \$40.00 per ton. The reasons for \$35.00 and \$40.00 sales in the Sacramento River and Mendicino County districts are not as yet clear. However, the general effect has been to stimulate higher hopes for profitable Bartlett prices than have occurred since 1931. The price of \$32.50 per ton (if sale is made direct to cannery) is equivalent to an f.o.b. price of \$.77 per packed box, or \$2.61 on the New York market."

He had written on June 18th: "Several hot days in the early part of the week seemed to start flight of codling moth. Since this was apparently the first portion of the second brood, the fourth cover spray was applied at the Station. Cool weather in the latter part of the week has apparently checked codling moth flights, so we may have sprayed too soon. The cool weather is causing some worry by pear growers who fear hotter weather is necessary for optimum fruit growth rate. However, our fruit growth measurements indicate that the pear growth rate is as rapid as occurred in mid-July of 1932 and 1933. Bartletts are sizing very rapidly, and harvest for fresh fruit shipments will probably start about July 10."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"The Panariti were harvested this past week on June 26th," he writes in his report for the June 11-30th period.

"The average harvesting date over a period of 16 years previous to this season has been July 28th. This is given as an indication of the earliness of the present season compared to previous years. Similar conditions are prevalent with other varieties.

"Grape seedlings are coloring and ripening and some are edible, but have not reached their proper stage of maturity. With moderate temperatures most of June, the final days started 'warming up,' the 29th registering 106 degrees F. and the 30th 109 degrees F. in the shade at the Fresno Experiment Vineyard. At this writing, July 1 at noon, the temperature reads 104, and still going."

George F. Waldo, Corvallis, Ore.

"During the past week we continued making selections of blackberries and raspberries," he writes for the June 11-16th period.

"The selection of these bramble seedlings is now completed. A considerable number are showing promise for various uses. These selections will be transplanted next year to another location for further testing. Dwarf and sterile plants have been removed where they appeared. Seedlings which did not appear to have reached their maturity are being saved for another season. However, a large number of raspberry seedlings had reached their maturity this year and those not selected are being discarded.

"A trip was made to Florence, Ore. to see a blackberry selection which was found to have considerable promise. This selection may be a wild blackberry x Logan."

TRUCK CROP DISEASES

W. D. Moore, Charleston, S. C.

"Weather conditions in this section remain abnormally dry and hot," he writes under date of June 30th. "Data just released by the local Weather Bureau show the month of June to have been the warmest June in ten years, and the driest in thirteen years. The rainfall for the month was only 1.68 inches, as compared to a normal of 4.59. Since the accumulated deficiency in rainfall was 1.37 inches on June 1st, the total deficiency to date for the year is now 4.28 inches."

FRUIT AND NUT PRODUCTION

Apple Trees and Drought In times of serious drought the owner of an apple orchard who fears for the life of the trees can improve their chances by removing the growing fruit. This is the hint given apple growers by Doctor Magness in a recent press release based on a four-year study of the effects of moisture supply and the value of irrigation in eastern fruit orchards.

Also the apple grower can improve the quality of the remaining crop, says Doctor Magness, by removing part of the apples in an orchard in which the moisture is inadequate but the trees not in danger from drought injury. Drought will not affect greatly the time of the apple harvest. Dry weather in spring and up to the early part of July is likely to induce an extra heavy set of fruit buds for the following year, but late summer drought will have no effect on fruit bud formation.

"These are some of the results of a four year study of the effects of moisture supply and the value of irrigation in eastern fruit orchards, according to Dr. J. P. Magness of the Bureau of Plant Industry," says the article. "The study has proved of particular value this year in presenting a picture of what an orchardist may expect if he is in one of the numerous areas now affected by drought.

"These investigations," points out Doctor Magness, "have shown that fruit trees can stand unusual moisture shortage and still recuperate quickly when moisture is again restored. Trees carrying a heavy crop are far more seriously affected by moisture shortage than are trees carrying little or no fruit. If a grower fears for the life of his trees, removal of the fruit would be an aid in saving them.

"The first marked effect of drought," he goes on to explain, "is a slowing down in growth rate of the fruit. Some growth of fruit occurs on drought-affected trees, however, until the trees become definitely wilted. After the trees are definitely wilted, growth of fruit usually ceases entirely and the fruit may actually shrink on the trees.

"If moisture again becomes available before the tree has lost its foliage, growth of fruit will be resumed at almost a normal rate. The size of fruit at the end of the season, however, will be reduced in proportion to the length of time the apples have stopped growing or have grown at a reduced rate. Normally, with sufficient moisture the growth rate of apples as measured by volume is almost uniform from late June through until harvest time. Any reduction in growth in this period because of a lack of moisture results in a corresponding decreased size at harvest. The time of harvest is only slightly affected by drought conditions.

FRUIT AND NUT PRODUCTION

"After the soil is thoroughly dried out there is little that the grower can do to help fruit growth unless he can add water. Placing a mulch of straw or similar material around the trees, or cultivation--two methods of preventing the growth of other plants--will tend to conserve such moisture as may be available but will not be of much value in soil already dried out.

"In Eastern orchards if trees have suffered moderately because of water shortage prior to early July, increased fruit-bud formation for the following season is likely to result. On the other hand, the development of drought conditions later in the season will probably have no effect on fruit-bud formation for the following year.

"The color of fruit is also seriously affected if the trees are suffering from lack of moisture during the ripening period. Instead of a bright, attractive red, fruit which ripens on drought-affected trees is likely to be dull and lifeless in color. Thus both color and size of fruit are seriously affected under conditions of serious drought. This situation can be overcome in part by heavy thinning of fruit. Where water can be supplied by irrigation, fruit of excellent size and color can be produced during such dry seasons.

"Under climatic conditions similar to those in the Middle Atlantic States, from three to four acre-inches of water per month of the growing season must be available if the trees are to bear full crops.

"Soils high in water-holding capacity will store in each foot of soil as much as two acre-inches of water that will be available for the trees. Thus, a good retentive soil four feet deep will store water enough to carry the trees through two rainless months and with only limited reduction in fruit growth. But where there is only about two feet of soil above an impervious hardpan, trees may show signs of suffering within three or four weeks, even if the soil is thoroughly wet at the beginning.

"Irrigation in many eastern apple orchards, particularly where the soil is moderately shallow or is porous, would be of much value during many seasons. Irrigation would increase the size and improve the quality of the fruit."

However, irrigations systems are rather expensive for most orchards and so are justified only if a thoroughly dependable source of water is available to the grower.

FRUIT DISEASES

W. S. Ballard, Fresno, Calif.

Writing from the United States Fruit Disease Field Laboratory on June 16th, he says: "The season's rainfall has been the least in over fifty years of records. The total to date for Fresno is about 4.4 inches, and the normal for this date is 9.4 inches, so it is evident that we have had less than half the normal rainfall to support this year's crop. The total at this time last year was also considerably below normal; namely, 5.8 inches. There is a marked shortage of snow remaining in the high mountains, and the water will probably be out of the canals earlier this season than last.

"At the beginning of the season grape leaf hoppers were present in greater abundance probably than ever before due to the milk weather, and promised to do very serious damage. Most of the growers made a strong effort to scrape up the money for the control of this pest, and much good work has been done. It remains to be seen what the final outcome will be later in the season when the later generations of hoppers accumulate from the present remaining infestation, and when the hot weather and probable shortage of water combine to produce their damaging effect.

"One of the methods of controlling hoppers is by the use of pyrethrum extract dissolved in a light kerosene type of oil. This oil solution of pyrethrins is atomized and blown into the vines by various types of power outfits. Of course, the control of grape leaf hoppers is not a problem with which our division is concerned, but it is interesting to note the small amount of material required to give satisfactory control when applied in an atomized form. Early in the season when the new growth is perhaps not over a foot long, four gallons of material per acre is a very generous allowance for good results. Figuring roughly 500 vines per acre, this amounts to one liquid ounce per vine, including of course the considerable quantity that is not deposited on the vines at all. This means that the oil is very thoroughly atomized and is diluted with a large volume of air as it is blown into the vines.

The pyrethrum oil costs about 52 cents per gallon this year, and the commercial sprayers furnish the equipment and labor for application at 75 cents per acre, which makes a total cost of about \$2.75 per acre. In the particular instance that I have in mind, the owner put on a second application about two weeks ago, after a good growth of foliage developed, at a cost of \$4.40 per acre. The increased cost of this second application over the first was due to the greater amount of foliage on the vines."

FRUIT DISEASES

H. F. Bergman, East Wareham, Mass.

"During the last two days we have begun bagging cranberry flowers for cross pollination," he writes on June 30th. "The cranberries, with the exception of bogs on which the water was held late, are now in full bloom. The bloom is very heavy and if the usual number set the crop will be as large as it has been for the last few years."

On June 18th he had written: "Further examinations on the condition of cultivated blueberries were made during the week. A great deal of winter injury which was not apparent early in the season is now evident, causing a stunting of leaves and fruits. The plants are beginning to recover from this, however, and new shoots are quite normal in appearance. The crop this year will be very much reduced below that of last year."

"Winter flooding injury of cranberries is very evident on a number of bogs and in a few instances there will be no crop on the more deeply flooded portions of the bog. We spent one day on such a bog making counts of the number of terminal buds that had been killed."

"Injury to dry cranberry bogs by winter killing has been very severe in Barnstable County where there are more dry bogs than elsewhere in the State. This, together with frost injury late in April, will reduce the size of the crop by a considerable amount."

Leslie Pierce, Vincennes, Ind.

"Severe sulphur injury on apple foliage appeared on Turley, Stayman and Winesap the last few days in May. The affected leaves at first showed a mottled green appearance, later turning yellow and falling. Trees of the three varieties named sprayed pre-pink, pink, calyx and first cover with lime-sulphur 1-40 or with flotation sulphur 2-1/2-50 the same number of applications had lost 30 percent of their leaves by the end of June."

"Trees of the same varieties sprayed pre-pink and pink with lime-sulphur 1-40, dry lime-sulphur 2-50 in the calyx and Bordeaux 1/2-1-1/2-50 first cover showed only a trace of foliate injury and practically no defoliation. The foliage of Grimes and Delicious was not injured by four applications of lime-sulphur 1-40 or the same number of applications of flotation sulphur 2-1/2-50. The fruit and foliage of Grimes, Turley, Stayman and Winesap sprayed six times with the new copper phosphate spray are in perfect condition."

FRUIT DISEASES

M. A. Smith, Springfield, Mo.

Writing from the Ozark Fruit Disease Laboratory on June 30, he says: "The severe drought which we have experienced for the past three weeks has made spraying operations throughout the Republic-Marionville-Aurora section increasingly difficult because of the necessity hauling water--in some cases two or three miles. Spray ponds, springs and in some instances wells have dried up, making the situation a serious one.

"To date, apples seem to have withstood these drought conditions very well. On the other hand, the crop of raspberries and blackberries which promised to be large earlier in the month was reduced by 50 percent.

"In some orchards we have noticed foliage and fruit injury to apples due to the use of oil sprays. From the records of some of the orchardists it appears as if this injury has been due to the use of spray oils shortly after an application of sulphur containing spray."

John C. Dunegan, Fayetteville, Ark.

"On June 21, the fourth cover spray was applied to the Stayman experimental blocks. There are only a few apples on the check plots infected with scab and I fear the sprays will not have a thorough trial at Fayetteville this season due to the lack of disease.

"However, the effect of the new sprays, particularly copper phosphate, on the finish of the fruit is a feature not to be overlooked and the experiment will yield information on this phase of the problem even though data on the efficiency of the sprays against the various fungi probably will be lacking this year.

"The bacterial spot disease is present in all the orchards I have visited this year and may reduce the size of the crop somewhat. Brown rot, in the form of blossom blight, is prevalent in the plantings of the early varieties in the State, but fortunately at the present time the early varieties have not been planted extensively."

One of our office associates who was persuaded to plant out a small home garden this season, now insists that it is all a lot of hoe-y., adding that many a muddy garden gets a dirty dig! And sow to bed.

DISEASES OF ORNAMENTALS

Frank P. McWhorter, Corvallis, Ore.

"Our old enemy, the Botrytis disease of lily, has been worse than ever in the history of our experience with these plants here," he writes on June 27th. "In addition to the lily trouble, which we may reasonably expect, we have experienced two important diseases of iris and narcissus. One of these, which affected especially bulbous iris, was none other than the old, common, widely distributed leaf spot of flag iris, now appearing in characteristic form on bulbous iris. This disease has cut down the foliage of almost all of the important plantings in the northwest. In some cases the immediate loss is extreme. The other new disease which has appeared is the English form of fire of narcissus. The narcissus trouble was not widely distributed, but it did appear in one of the most important growing centers in Washington. The foliage of more than 200 acres of narcissus was totally destroyed by this new leaf spot. In cases where the disease appeared early, the bulbs evidenced no growth whatever, but merely remained the same size as when planted.

"During the latter part of the season, we developed a rather unusual control for Botrytis of lilies. After trying and seeing tried all the standard remedies, we began experimenting with variations of the Newton Sulfo-Resin spray. Many compounds of the spray with copper were prepared. None of these evidenced any satisfactory control against Botrytis. Then we thought of trying first to spray the plants with the standard Sulfo-Resin spray, which is a wonderful sticker and which covers slick leaves with ease, as a basic spray, then immediately apply a copper-lime or Bordeaux dust. This gave startling results on the Madonna lily, which was our chief test plant. With this success in mind, having already tried ordinary Bordeaux on the iris trouble referred to above, we attempted control of the iris and narcissus troubles by this combination method. In some cases where the combination was thoroughly applied, we are able to report definite evidence of control.

"Now a few words about this strange new English fire on narcissus. The causal fungus which passes under the name Botrytis polyblastic, is a fungus extraordinary. On infected leaves and stems the fungus fruits, but instead of producing a large number of spores as Botrytis should, it produces only a few. These spores are of enormous size. To form some opinion of their size, we made quantitative measurements. One of them will weigh approximately 264 times as much as an ordinary Botrytis spore. Another fact indicating their size is that when well developed they average about 11 or 12 to the millimeter. Yes, the individual spores can be plainly seen with the unaided eye. One of our co-workers pointed out that when one of these spores is placed on a slide in a drop of water and a cover glass put on it, the cover glass rolls around as though a marble were under the glass. These points I advance in support of the statement by the Englishman who originally described it; namely, that it is a fungus extraordinary."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

"The raspberry crop has been moderate in size," he writes on July 3d, settling down to work after having laid in his fireworks for the Fourth, "and the berries generally of excellent quality due to favorable growing and harvesting conditions, but this fruit as well as the loganberry suffers frequently from raspberry worm infestation, which is the more serious in loganberries, because they retain the torus, when picked. It has gone hard with loganberries at the canneries during the past few years because of this infestation, and their production is on the decline, with a faint hope for revival if the manufacture and sale of loganberry wine becomes promising.

"The harvest of peas is definitely under way, and frozen pack pea production is in full swing on Laxton Progress and early Alderman and Telephone. The prospective volume frozen packed by all factors in the Pacific Northwest is difficult to guess but I believe will run into several thousand tons of shelled peas. Due to the generally favorable pea growing weather in the Northwest, the large yield per acre, and possibly the recent unfavorable conditions in the midwest, this State is experiencing a surprising development in the canning of peas. New pea canneries have been established at Dayton, Vancouver, Ellensburg, Longview, East Standwood and La Conner, and these seem to be but a beginning. Frozen pack pea plants exist now at Vancouver, Chehalis, Renton, Seattle, and Snohomish. There is certainly enthusiasm on all sides for this vegetable in the frozen form.

"The 1934 packing season was begun with an experimental pack of two varieties of new potatoes--Garnet and Shafter White. These packs were later examined and indicated that there is much to be learned before a successful new potato frozen pack is feasible. Striking morphological effects are produced in raw potatoes, as is of course common knowledge, and our scalding experiments introduced some more, particularly when the material was held at 20 or 32 degrees F.

"Additional packs have in several instances at least emphasized the varietal factor, as has been the case in former years. The following commercially popular varieties were harvested in several maturity stages and prepared in commercial packs: Black Republican, Tartarian, Deacon, Bing, Lambert and Royal Anne.

"Blueberry packs have begun and include San, Harding, Grover, Rubel, Katherine, Pioneer, Adams, Cabot and Northwestern-developed seedlings and hybrids. A large number of raspberry varieties and seedlings, some 30 odd, have been harvested several times during the season and preserved by freezing. These included Cuthbert, Lloyd George, Latham, King, Herbert, Erskine Park, Antwerp, Utah, Viking and many selections from the Western Washington Experiment Station."

ADMINISTRATIVE NOTES

Exception to an Executive Order We have word from the Procurement Division of the Treasury Department that by Administrative Order No. X-46, dated June 11, 1934, the Administrator for Industrial Recovery, acting under Paragraph 5 of Executive Order No. 6646, has approved Exception No. 20 from the operation of this Executive Order, as follows:

"All purchase orders, or contracts for supplies or equipment or for the procurement of services, on open market purchases, when the aggregate amount does not exceed \$100 in any instance; provided that contracting or purchasing officer certify that it is either not practicable or is impossible to obtain the certificate contemplated by Section 1-A of the Order."

You will recall that the Executive Order required that certificate of compliance be attached to all vouchers covering purchases of supplies or equipment, or the procurement of services of a non-personal nature. This Exception permits purchases in amounts not exceeding \$100, providing the Purchasing Officer certifies that it is not practicable or possible to obtain a certificate.

In view of a previous Exception, vouchers in amounts of \$50 or less may be submitted without either the certificate or an explanation for failure to submit the certificate.

POTATO INVESTIGATIONS

W. C. Edmundson, Greeley, Colo.

"Crops at the Station are in good condition at present," he writes under date of June 25th.

"The oats have headed and will begin to ripen soon. The second cutting of alfalfa is making very good growth.

"Thursday and Friday we set out potato seedlings. The ditch company gave us a special run of water in order that we could finish the work. We set out 8,522 potato seedlings in twelve and one-half hours.

"The seedlings are in excellent condition today, but it is hoped that we will have a run of reservoir water this week."

ADMINISTRATIVE NOTES

Air Mail Cheaper. "The Post Office Department advises that under an act of Congress, effective July 1, 1934, the rate of postage on air mail will be reduced to six cents for each ounce or fraction thereof, regardless of distance, the present rate, as you know, being eight cents for the first ounce and thirteen cents for each additional ounce," says a letter from Mr. H. A. Nelson, Chief of the Department's Division of Operation.

"This greatly reduced rate, exceeding 50 per cent in many cases, becomes effective without any impairment of the service. On the contrary, the service has been greatly extended and improved, the city of Washington now being served by air mail lines running in many different directions.

"These features are brought to your attention with the thought that in many instances where telegrams are now being sent by the various Bureaus, it would often be more satisfactory to send the messages via air mail at the new rate, because of lower cost and the opportunity afforded for transmitting more complete and detailed instructions than is practicable in telegrams.

"If desired, air mail letters may be sent special delivery, thus adding the further advantage of immediate delivery at the office of address. This is often well worth the additional charge of special delivery. A new 16-cent stamp for this purpose will soon be issued which will cover both the air mail postage and the special delivery fee on an ordinary one-ounce letter. Of course, other stamps may be used.

"Your consideration of this matter is requested as it is believed that it would be advantageous to the department to make more extensive use of the air mail where practicable, in lieu of the telegraph, for the reasons mentioned."

The NEWS LETTER some months ago touched upon this possibility of substituting the air mail letter for the telegram. Air mail, in particular, may sometimes take the place of a night message to excellent advantage. Inquiry at the Department's postoffice then revealed the fact that it was possible to airmail letters on the 3:20 p.m. plane at Washington, D.C. and get them into San Francisco at 11:55 the next morning, though to be certain that the letters caught the 3:20 plane we had to get them over to the Department's post office not later than 2 p.m.

And, of course, there is the Army and Navy radio service, over which messages are sent without charge where satisfactory connections can be made. The air mail letter demands consideration especially because of the more detailed instructions which may be sent in it.

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July 16, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER .

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., August 1, 1934

No. 15

Publications A stranger thrust his head into the doorway of the general store of the village and called out: "I'm looking for a small man with one eye." Whereupon the village jokester suggested: "If he's a small man, you oughta use both eyes."

Well, the other day while I was using both eyes in Mr. H. P. Gould's office, seeking to round up field reports for use in the NEWS LETTER, I saw on his desk a summary of our publications during the fiscal year just closed, prepared for him by Esther Baitz from our progress reports. As nearly as I could figure out while his back was turned, we not only contributed some 60 papers to the various Department series, including the Journal of Agricultural Research, but succeeded in presenting phases of our activities in more than 200 papers contributed to outside journals, society proceedings, etc.

The limitations fixed by economy makes it desirable that only publications of some permanence or vitally needed in some emergency be issued by the Department, hence this effective use of outside publications is a matter of considerable importance. After all, no matter how efficient our investigators may be, the value of their work to the American public rests upon our ability to get their findings into the hands of those who need and can use the information profitably. The records indicate that we are making a pretty good job of this. The abandonment of the unwise practice of girdling citrus trees in California has been brought about largely through papers we have contributed to the Citrograph and similar journals, giving the results of our girdling tests, for example.

The same channels have offered a way for the prompt dissemination of information concerning our general studies of orchard practices by means of the individual performance record plan. Some of these studies have proved to be among our biggest dividend producers, and they have produced these dividends promptly largely because we were able to use outside publications in getting our results before growers in a manner to convince them of their value.

For example, as a result of the citrus tree pruning studies which have been carried on for many years in connection with this individual tree performance work, and reported on regularly in citrus trade papers, a light thinning system has been generally substituted in commercial citrus orchards for the severe pruning method formerly in almost universal use in California. Through this change, a large annual saving in the amount of Washington Navel and Valencia orange, Marsh grapefruit, Eureka and Lisbon lemon crops has been effected without any reduction in the quality of the fruit, the cost of pruning has been greatly reduced, and a marked increase in the size of the trees has been brought about by eliminating the dwarfing effect on tree growth caused by heavy pruning. A close observer of the citrus industry of California estimates that the increased crops resulting from this lighter pruning means an added return to the growers of that State of more than \$3,500,000 a year!

The information distributed by means of our contributions to outside publications, proceedings, etc., need not be in the million-dollar-a-year class to be worth its salt. Every now and then one of our investigators makes some interesting discovery which, put into print immediately, is of wide use.

Something over a year ago, our readers will recall, Atherton C. Gossard sent us from Spring Hill, Ala. a suggestion to pass along to those who might be doing pruning on large trees in a climate where the painting of pruning wounds is necessary. For cuts made with a pole saw or pruning pole, or any cuts difficult to reach with an ordinary paint brush, he had devised a combination of an ordinary ten-cent shoe dauber and a pole. He had lashed such daubers to poles of three or four different lengths and found these long-handled brushes, with the bristles on the side, very convenient for painting cuts beyond arm's length.

We used this suggestion in the NEWS LETTER for the benefit of our own workers and the idea met with such approval that the Press Service of the Department prepared a notice for agricultural journals and similar papers all over the country, so that this useful suggestion ultimately proved of help to thousands of orchardists.

Which, of course, contains a hint to the effect that the NEWS LETTER will welcome your note about a time saving method, etc. which might be of help to your fellow sufferers.

CANNING, DRYING AND PRESERVING.

The Young Dewberry The Fruit Products Journal for May contains a paper by J. M. Lutz, R. C. Wright and J. S. Caldwell on "preservation of the Young and Lucretia Varieties of Dewberries by Freezing." The findings of these investigators will delight those who know the unexcelled flavor of the Young dewberry (or Youngberry), but who have been handicapped in the matter of putting their knowledge to practical use, as commercial shipments of this berry over any considerable distance have been rather unsuccessful because of its tendency to soften and stain the boxes with juice.

The authors go on record with the pleasing news that for dessert purposes, Young dewberries can be frozen in either airtight or non-airtight containers with excellent results when packed in 45° or 50° sirup. Packing with dry sugar gave a product slightly inferior to the sirup pack, while fruit packed without either sugar or sirup was still less desirable. For freezing the fruit, temperatures as high as 0° to 10° may be employed; for subsequent storage, temperatures as high as 10° to 15° may be used. For use in preserve or ice cream manufacture, Young dewberries can be packed in large containers, with or without sugar. Temperatures of 0° F. or lower are necessary for large containers until the material has reached the freezing point; after becoming frozen, it may be stored at temperatures as high as 10° F. to 15° F.

--and Red Raspberries. In the June issue of the same journal, J. M. Lutz, H. H. Moon and J. S. Caldwell tell of the possibilities of preserving red raspberries by freezing in the Eastern States--also very pleasing news to those with an appreciative tooth--or teeth. The high quality as well as the perishable character of the red raspberry is or are well known. The fruit is so universally popular as a breakfast and dessert fruit that its consumption would undoubtedly be increased considerably if it were available in acceptable form at all seasons. At present its consumption in the fresh state is limited to its ripening season. Transportation for any great distance requires very careful handling during harvesting and preparation for marketing, and the use of efficient transportation and refrigeration facilities.

Although the canning (heat processing) of the fruit makes it readily available throughout the year, and it can also be transported in the canned state, the advantages accruing from the availability of red raspberries in as nearly the fresh state as possible on our consuming markets are obvious. Experimental work conducted by the authors and their associates with fruit grown in the Eastern States during 1932 and 1933, has shown that this is possible through freezing preservation. The varieties used were Latham, Chief, St. Regis and Cuthbert, and they ranked when frozen in the same order of quality as when fresh. They--but what more need be said? As J. S. (Julius Scaesar) has aptly remarked: Veni, vidi, vici! Which, of course, is translated as Ve came, Ve saw, Ve conquered!

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Blight infections are continuing to show up throughout the Valley," he writes under date of July 9th.

"Mr. Gonyon, the orchard foreman, has been keeping a record of each tree showing any infection for all trees at the station. Examination of his notes show as many infections in the driest as in the wettest irrigation plots.

"Furthermore, the "Dry Early-Wet Late" plots show as many infections as the "Wet Early" or "Wet" plots. This contradicts the popular conception that irrigation in the spring and early summer increases blight injury. The rate of extension of the blight infections seemed to be as great in the "dry" as in the "wet" plots."

A. D. Shamel, Riverside, Calif.

"We spent last week in the San Joaquin Valley studying our peach progeny planting on the Fancher Ranch at Merced," he writes July 16th.

"The early Paloro trees were outstanding and a beautiful picture with their large, handsome fruits. On Thursday the ranch manager, Mr. Griffin, took a dozen boxes of the fruit to their Kingsburg cannery for a canning test. We went with him and saw the complete canning operation.

"While it is too early, perhaps, to come to a definite conclusion as to the value of this variety for commercial culture, it is certainly superior to the Tuscan or any other early canning variety. A considerable acreage, perhaps 50 or 100 acres of the Early Paloro will be planted at the Fancher ranch alone next fall as dormant budded trees. We were very happy at the prospect of this variety as a valuable contribution to the canning peach industry."

"The Early Sims variety also looks to be a very useful variety and may take the place of the Peak variety. The Peak trees have several undesirable characteristics that the Early Sims trees do not have. The fruits of the Early Sims are apparently identical to the Sims fruits that are considered to be the best canning fruit raised on this ranch."

Horticultural Products Exclusively.--- "I've tried to be a real good boy, But lawsy, what's the use? It's 'Eat your spinach, darling, Then you'll get some orange juice.'"

COLORING CITRUS FRUITS--AND FEDERAL FOOD AND DRUGS ACT

July 16th, the Secretary issued the following notice to growers and shippers of citrus fruits:

"The question of the coloration of citrus fruit by artificial means has arisen in connection with the enforcement of the Federal food and drugs act. By the terms of that act, if the addition of color to any article of food conceals inferiority or damage the food is adulterated and the adulteration is not corrected by any form of labeling. If the added color does not conceal inferiority the fact of its addition requires a plain and conspicuous label statement. The application of any dye to oranges represents the addition of coloring substance not normal to the orange. The use of a dye or any process to conceal inferiority or damage constitutes adulteration.

"The Department holds that where a dye is used to add color without constituting adulteration, a label statement is required on the skin of each orange plainly showing it to be treated with added color. The ethylene process which has been in use for a number of years does not add any color not normal to the orange but constitutes in effect a kind of blanching process causing the disappearance of the green color (chlorophyll) in the superficial layers of the skin thereby unmasking the natural yellow to red pigmentation already present. In no case by the use of this process is varietal identity concealed: the effect is one ordinarily produced by natural development. It may be compared to the artifice employed in the blanching of celery stalks. The Department, therefore, announces no change in its policy, in effect for a number of years, with respect to ethylene-treated citrus fruit."

The Weather It has long been something of a boast with the English people that the sun never sets on the British Empire, though as a matter of fact, the hen could make a similar claim--her son never sets either. However, what the English have in mind is the variety and extent of climate included under the British flag.

Well, the flag of our Division floats over a considerable range of climate, too. Only recently we had Doctor Aldrich's report of light snowfall in the Rogue River Valley the middle of June--and right welcome news it was, with Washington running a temperature above 100. Now comes Dr. M. A. Smith, writing from the Ozark Fruit Disease Laboratory at Springfield, Mo. on July 14th: "This information will be of small comfort to you, but as a matter of record it should be reported that July 13th while the temperature was 101 degrees at 150 feet above ground, two eggs were fried on the roof of this building in 15 minutes. Roof temperature was 127 degrees (Weather Bureau record)--Sorry we cannot report a light snowfall."

The information is of small comfort, true, but a consideration of that degree of heat has a certain moral value, I believe, leading one to consider with more than usual care the possibilities of that--er--burn, from which no traveler returns.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"Striking control of walnut blight was obtained by the use of Bordeaux mixture in tests carried on in walnut plantings at Scholls and Eugene, Ore., respectively," he writes on June 30th. "In studies conducted at Scholls, two applications of Bordeaux 2-2-50 reduced the amount of blight infection from 21 to .02 percent. Bordeaux mixture 1-1/2-1-1/2-50 gave practically as good control, as Bordeaux mixtures 2-2-50, 3-3-50 and 8-4-50, respectively.

"Studies carried on in this planting further indicate that timing the applications properly is the important factor in the control of bacteriosis. Tests show that for the best results two applications should be made, the first just before the period of pistillate bloom. Applying the spray from ten days to a week before the blooming period did not give as good results as where the application was completed from one to three days before the period of pistillate bloom. The best results followed where the second treatment was made after the bulk of the pistillate flowers had been pollinated (18 days after the first application). Where a longer period than three weeks intervened between the first and second treatment, a noticeable increase in the amount of blight was apparent.

"Excellent control of blight was also secured in tests carried on in a grafted Franquette orchard near Eugene, Ore. Two applications of Bordeaux 2-2-50, one treatment applied just before bloom and the other immediately after bloom, reduced the amount of blight infection on the nuts from 32 percent to 1.1 percent. While the plot sprayed with Bordeaux 6-3-50 had fewer infected nuts (.02 percent), it is doubtful if the difference in control between the weak and strong strength of Bordeaux is sufficient to warrant the extra cost associated with using the stronger strength. Bordeaux 2-2-50 plus oil emulsion (one gallon to 100) gave practically as good control as Bordeaux 2-2-50 alone. It would seem from the results of this test that the use of an oil emulsion with Bordeaux mixture does not decrease the effectiveness of Bordeaux as a germicidal agent. Leaf burn, however, was practically eliminated this year with a Bordeaux-oil combination."

On July 14th he reported: "Good control of walnut bacteriosis was obtained by the use of Bordeaux mixture in tests carried on in a Mayette walnut planting near Sheridan. In studies carried on in this orchard, two applications of Bordeaux mixture 3-3-50, the first treatment applied when about 25 percent of the female flowers were in bloom and the second applied about two weeks later, reduced the amount of blight infection on the nuts from 39 percent to 4.7 percent.

FRUIT DISEASES

Paul W. Miller (continued)

"The first treatment was apparently the more important of the two applications under these conditions, as is indicated by the fact that the plot sprayed with the first treatment only contained 13 percent blight, whereas in the plot sprayed immediately after bloom but not before 19 percent of the nuts examined were infected. However, under the conditions of this test both of these treatments appear to have been necessary to give satisfactory control of walnut bacteriosis...."

"Vegetation in the Pacific Northwest is beginning to show the effects of an unusually dry season. Mr. Schuster's moisture studies show that soils on which many walnut orchards are located are now approaching the wilting point, with harvest still approximately two months away. A recent press release from the Weather Bureau of the Oregon State College points out in no uncertain manner the rainfall deficiency for this part of the country.

"According to E. F. Torgerson of the Soils Department of the Oregon State College, in every month beginning with January the rainfall for Corvallis has been below normal. A total deficiency of rainfall for 1934 is 9.74 inches, the months of January, February, and March being exceptionally dry. Only two rains were recorded in June. On June 26 there was .19 inches and on June 27 there was .02 inches, making a total of .21 inches. Only three years--1918, 1922 and 1927-- show such a deficiency of rainfall."

On July 7th he wrote: "Good control of walnut blight was obtained by the use of Bordeaux mixture 3-30-50 in tests carried on in a walnut planting near McMinnville, Ore. In studies carried on in this planting, two applications of Bordeaux 3-3-50, one treatment applied just before and the other immediately after bloom, reduced the amount of blight infection on the nuts from about 41 percent to 5.8 percent. Of these two treatments, the first or pre-bloom application was apparently the most important under these conditions, as is indicated by the fact that the plot sprayed with one treatment only applied just before bloom contained 18.4 percent blight, whereas in the plot sprayed immediately after bloom but not before, 31.9 percent of the nuts examined contained blight lesions.

"Under conditions where the amount of blight infection is not particularly severe, copper lime dust is apparently effective against *Ps. juglandis*, if the results of dusting trials carried on in a walnut orchard near Eugene, Ore. may be taken as a criterion. In a test carried on in

FRUIT DISEASES

Paul W. Miller (continued)

this planting a plot of 20 walnut trees was dusted four times during the season with a copper lime dust, two applications being made before bloom and two after bloom. These four treatments served to reduce the amount of blight infection on the nuts from about 20 percent to 1.7 percent.

"In my weekly report of June 9, mention was made of the fact that a bacterial organism which is indistinguishable in culture from the filbert blight pathogene was isolated from dead twigs collected from native wild hazel (Corylus californica) growing in the vicinity of Oregon City, Ore. Since this report I have had occasion to test the pathogenicity of this organism on leaves of Corylus avellana, the cultivated filbert. Leaf spots which are indistinguishable from those resulting from inoculations with the filbert blight pathogene were produced on the leaves by spraying on pure water suspensions of the wild hazel organism. It would appear, therefore, that the organism isolated from the wild hazel is the filbert blight pathogene.

"During the week the filbert blight pathogene was isolated from discolored areas in tissues of filbert twigs about undeveloped bud grafts made during the spring. These grafts were sent into the office by a nurseryman at Salem, Ore., and in his letter accompanying the specimens he states: 'We are having a time getting reliable stands of filbert buds in the nursery. Last summer we had nearly a complete failure, and this spring we have lost too many.' It would appear from the results of isolation attempts made by the writer, that the bacterial blight disease is the cause of at least some of the bud failures."

J. R. Cole, Shreveport, La.

"Most of the week was spent in the laboratory, with occasional trips to the Skannal and Fullilove orchards, continuing my experiments on the bunch disease," he writes for the week ending July 7th. "Since I have found that the disease is contagious, I am now trying to find just how it is transmitted.

"I have made inoculations with juices and leaves from the diseased trees, but so far all results have been negative. I am transmitting the black aphid from the diseased trees to healthy ones, for I strongly believe that this particular insect will be found to be the carrier. I am very much handicapped for healthy trees to work with. Another experiment that I am trying is injecting the diseased juices and leaves into the healthy branches."

FRUIT DISEASES

J. B. Demaree, Albany Ga.

"Thinking that perhaps the disastrous effects of Bordeaux on pecans in case of a drouth and the association of heavy black aphid infestation on Bordeaux-sprayed trees may be connected with a depressing effect on the alkalinity of the spray on the guard cells of the leaves, we are this year varying the composition of the Bordeaux so as to give a lower pH reaction," he writes in his report for the three week's period ending July 14th.

"In addition to the usual formulae for making Bordeaux, we have decreased the amount of lime to one-half and one-quarter the amount of copper sulphate used. In some test sprays on small plots we have eliminated lime entirely and substituted bentonite. These last sprays, as was expected, cause some foliage injury. However, zinc sulphate as strong as 2 to 50, without lime, can be used safely. We are also using a neutral copper compound manufactured by the Sherwin-Williams Company. Then, too, we have been able to decrease the alkalinity of the Bordeaux by adding lime-sulphur solution. So far we have had no weather to give us any suggestion as to the effects of the acid and neutral sprays during a drouth, and it is too early for heavy infestation of black aphids.

"Rains fell frequently during the latter part of June and the first ten days of July and as a result, scab infections increased even in orchards that were sprayed.....

"We had two subjects of interest at Cairo: First, to inspect the zinc sulphate and fertilized plots in the J. B. Wight pecan nursery," he continues, speaking of a trip to Thomasville and Cairo, Ga. with Crane and Fowler to inspect orchards and nurseries in those two localities. "While we made no measurements of the trees in the different plots, we could not see any marked difference. There was a better stand of trees in the zinc sulphate plot, and the foliage seemed to be larger and greener, but an adjoining plot which received the same amount of zinc sulphate and in addition a mixer fertilizer at the rate of 250 pounds per acre, did not appear as vigorous as the plot getting zinc sulphate alone. All of our work with zinc sulphate in pecan orchards so far indicates that the salt will not stimulate nor increase twig and leaf growth in normal trees.

"The second point of interest at Cairo was that of the Frotscher variety scabbing. The Frotscher has been known to scab badly in central Louisiana, but has been listed as one of the most resistant varieties in the Southeast. This one Frotscher orchard near Cairo is scabbing this year about as badly as Delmas or Schley."

FRUIT DISEASES

H. F. Bergman, East Weymouth, Mass.

"Work on spore dispersal in relation to infection of cranberries by rot-producing fungi is being carried on," he writes on July 7th. "The results so far indicate that *Sporonema* is carried mostly by water, while *Godronia* (End-rot) is carried by air. The date of the first appearance of *Glomerella* in cultures from buds indicates that spraying should be done earlier in the season than is ordinarily done. "Blueberries (cultivated) are beginning to ripen with indications of a good crop, although less than last year. There has been no rain for some time and unless it rains soon the blueberry crop will be cut short by drought."

He had reported on June 23d: "Some further work on blueberry disease investigations has also been done. On one field in which the old wood had been killed during the winter, and which had been later removed, new shoots have developed. Many of these new shoots now show disease lesions and some of them are wilting at the tips. Some of this material has been cultured but it is not yet possible to determine the presence and identity of a fungus. "Early Blacks and some of the Howes cranberries are now well in bloom and prospects for a large crop this year now seem very good. We had a heavy rain Tuesday night which has improved the condition of crops in general."

Writing on July 14th he reports: "Spray injury is becoming apparent on some plots which were sprayed with mercurials. "Occasional buds, flowers and tips of shoots are burned, but the most noticeable effect is a general yellowing of the leaves which may be due to destruction of chlorophyll by the mercury. It is more apparent where the spray was applied more heavily. "We have been taking considerable time this week on cross pollination of cranberries, using four varieties in the crosses. The fruit of the "crossed" berries seems to be setting well."

John C. Dunegan, Fayetteville, Ark.

Writing on July 7th, he says: "I made a visit to the Italian Prune orchard near Cherokee City on July 6th to collect additional specimens of the bacterial disease which I have been studying for the past few years. I was particularly interested in seeing whether the disease was present on the fruit, but while I found spots present on the leaves I could find no indications of the disease on the fruit.

"I have secured cultures of two different fungi and two different bacteria from the Bing Cherry cankers mentioned in a recent report. Inoculation experiments to test the pathogenicity of these organisms will be started in the near future."

FRUIT DISEASES

M. A. Smith, Springfield, Mo.

Writing from the Ozark Fruit Disease Laboratory on July 21st, he says: "The Annual Meeting and Summer Tour of the Missouri State Horticultural Society was held at Republic, Mo. July 20th. During the morning a tour was made of orchards and vineyards in the vicinity of Republic. The afternoon program consisted of discussions of "Spray Injury," "The Spray Residue Problem," "Codling Moth Control," and "Results of Horticultural Experimentation at Mountain Grove, Mo."

"This last topic was discussed by Mr. Paul Shepard, Director of the Missouri State Fruit Experiment Station at Mountain Grove, Mo., who reported among other things the successful culture of the Seneca cherry and the Mikado peach at the Station. The Seneca cherry ripens early in May and this season gave a good yield of high quality fruit. The Mikado peach, which ripened three weeks ago, yielded well this season. It is apparently more resistant to winter killing than the Elberta.

"During the progress of the orchard tour we were enabled to see the results of the extremely severe drought which we have been experiencing since May. Trees up to 15 years of age in well cultivated orchards seem to be standing the drought remarkably well. Injury, characterized by leaf and fruit drop, is beginning to appear in some of the older orchards. In only one instance was severe leaf drop seen. This was in a 25-year-old block of Ben Davis growing in sod.....

"Several growers have already started hauling water to trees. Dr. E. L. Beal, who owns a block of Maiden Blush trees near Republic, has been applying 50 gallons of water to each tree every two days. The harvesting of Maiden Blush apples ordinarily occurs about August 15th in the Republic section. When examined on July 20th, however, the fruits were found to be only about one-half the size which they would normally be on that date. With a further continuance of the drought, late summer as well as fall apples which remain on the trees will probably make little further growth."

W. C. Edmundson writes from Greeley, Colo. on July 23d, discussing work at the Potato Field Station: "Considerable poison mash was put out last week for the grasshoppers. We also went over some of the fields with a hopper catcher. Eighteen bushels of grasshoppers were collected by this method."

DISEASES OF TRUCK CROPS

W. D. Moore, Charleston, S. C.

"With only .87 inch of rain during the present period," he writes for July 1-15, "we are well on our way at present to another record dry month.

"Normally, July is considered our wet month of the summer season, but to date the precipitation is far behind what may be expected. As a result practically all field crops are suffering to a marked degree. In many cases the cover crops have failed to make a favorable growth; in fact, some fields do not have more than a half stand. Early corn is being damaged daily, as is the case of the hay crops.

"Tomato harvest is now over, adding another to the long list of crops that failed to show a profit during the present season. The quality of this crop was not the best and market conditions were, on the whole, very poor, consequently the local growers had little chance of breaking even on their operations.

"I have talked with several farmers during the past few days, trying to learn what steps will be taken towards future operations in this area. The information received is certainly the gloomiest that I have ever gotten from our local growers. No one seems to know what can or will be done, since the financial condition of everyone is decidedly poor. Most men seem opposed to further Government aid, yet they admit that they must have financial backing if they are to operate at all."

ADMINISTRATIVE NOTES

Contract Schedules Delayed. Due to delay in receipt of the new contract schedules for the current Fiscal Year, our Section of Supplies has been unable to order many items requested lately both by employees in Washington and at field stations. As soon as the new contracts can be obtained, the orders will be sent forward. There will be no bound copies of the schedules this year, as the various classes are only being issued as separates. We will try to obtain a sufficient supply of these separates of important classes to distribute to the various projects and to our field stations. The reason the contracts are being made in this manner is that NRA codes prohibit guarantee of prices for long periods and it will be necessary to readvertise frequently for items formerly contracted for on an annual basis.

ADMINISTRATIVE NOTES

The Purchase of Reprints. Legislative authority necessary for the purchase of reprints (or "separates") of articles printed in outside publications is included in the Appropriation Act for the Fiscal Year beginning July 1, 1934, but--we must show clearly the necessity for the purchase. Use the ordinary Section of Supplies purchase Form No. 1, giving name of publisher, title, and price. The usual number of reprints which may be purchased is 100, and in no case will the purchase of more than 200 be approved; and no separates may be purchased unless the connection of the author or authors with the Department is shown in the article.

Requests for purchase must be approved by the Chief of Bureau, or by the Chiefs of Bureaus in case two or more bureaus are represented in the authorship of the paper. It is necessary to show clearly that the reprints will be used in the interest of the public as a definite aid or asset to the authorized work of the bureau in carrying forward its official projects or in answering official correspondence. The cost will be charged against the bureaus requesting the purchase.

Approval cannot be given for the purchase of separates of articles which, because of their character or content, were disapproved for publication by the Department by either the bureau concerned or the Office of Information. Separates of only research articles can be purchased. Funds will not be granted for the purchase of popular, propogandizing, or general informational articles. And it should be clearly understood that the Department will not reimburse outside journals for composition costs. Rather, it will pay only the usual costs for running separates off the press after the article has been set in type for incorporation in the journal. (Charges will vary, of course, probably ranging from \$1 to \$5 a hundred. To obtain these approximate prices, orders must be placed with the journal before the type is taken from the press.) No covers of separates can be paid for out of the Department's printing fund.

The separates purchased will be delivered to the Distribution Section of the Division of Publications, Office of Information, which will retain two permanent file copies of each separate, forwarding the remainder of the order to the bureau chief rather than to the author, and the bureau chief will have general direction of the distribution of the separates. This means, of course, that when your request comes in it must first be approved by Doctor Auchter, then by the Chief of Bureau, after which the Office of Information (not our Bureau) draws the order on the publisher.

Such reprints must not be mailed under frank with "Author's Compliments," of course. They should bear notation "Purchased by the U. S. Department of Agriculture for official use," unless mailed as an enclosure with an official letter, when the notation is not required.

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August 1, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI Washington, D.C., August 15, 1934 No. 16

The Old Family Doctor Himself! A good thing not only bears repeating; it apparently demands repeating over and over again in order to secure the best and most lasting results. Thus we find eternal vigilance is always the price we must pay for a profitable horticulture. We develop new varieties, we discover new methods, and we put these at the disposal of growers. After we have done this, and have demonstrated clearly the advantages of the new varieties and improved methods, we must still check up continually to prevent loose ends.

So, one comes finally to look upon the Division as the family doctor of the horticultural industry. It looks after the older children, brings new individuals into the world, and in general prescribes the best methods of handling and caring for the patient in order to make him a good citizen--capable of filling satisfactory the place to which--er--fate may assign him.

A certain amount of ill health is to be expected among plants as well as humans. The eternal vigilance is devoted to pointing out the danger signals, and indicating the right roads to follow. To have developed an improved variety, or to have worked out better methods for doing a certain job, is merely part of our program. Even after we have tested methods and varieties and demonstrated their superiority, placing them in the hands of the growers with full instructions, we still find the loose ends here and there. The surprising thing, in view of the imperative necessity for eternally repeating instructions and warnings, is that we can ever close up a project definitely and finally.

FRUIT AND NUT PRODUCTION

It is not surprising, then, to find A. D. Shamel writing from Riverside, Calif. on July 23d: "Last week I visited several Valencia orange orchards and packing-houses in Orange County.

"Some of the packing-houses were reporting heavy decay and the managers were unable to account for it. A brief inspection revealed the cause of this trouble to be very poor picking and careless handling of the fruit. In two of these houses particularly the number of clipper cuts, long stems and 'pulled' fruit amounted to about 40 percent. As usual, the poor picking was correlated with rough handling all along the line.

"I rather think that these instances of careless handling were more serious than any that I have observed in California in oranges during the past twenty years. Systematic efforts will be made at once to clean up and improve the conditions at those localities."

How Han Yen-Chih must turn and twist in his grave when things like this happen. Our specialists have been preaching the necessity for careful picking and handling for the past twenty-five years or so--but he was urging the same course of procedure more than 750 years ago! His famous monograph (Chu Lu) on the oranges of Wen-chou, Chekiang, China, was published in 1178. In addition to discussing varieties and orange culture in general, he has a chapter on picking and handling which is right up to the minute.

"After two or three evenings of frost," he writes, "all of the fruit should be clipped off with scissors....Use small scissors for removing the fruit from the branches, cutting them off even with the surface of the skin and carefully placing them in the basket. To protect them from injury one must be very careful for fear that the skins be cut, causing the volatile oil to escape, when the fruit will easily spoil....The fruits with which this oil comes into contact will likewise be affected."

He also urges that the fruit be kept away from liquor fumes, and directs that the orange pickers absolutely must not drink liquor during the time they are engaged in the picking and handling!

It looks very much as if our revolutionary improvements in handling and transportation, improvements which have reduced losses from 30 percent to about 2 percent in handling citrus fruits, may have been in the nature of a rediscovery of Han Yen-Chi's methods. At any rate, it has assuredly been a most profitable repetition. And apparently we must go on repeating for some time yet.

The translation of Han Yen-Chih's work, incidentally, was made about 15 years ago by Michael J. Hagerty of our Division, and published in the T'oung Pao, 2d ser. vol. xxii, 1923.

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Warm weather finally reached the Valley, bringing daily temperature maxima between 90 and 96. Coincident with these higher temperatures the rate of fruit growth decreased 30 to 70 percent. This reduction in fruit growth occurred on both medium and heavy soil types which had appreciable amounts of moisture above the wilting percentage. In plots with large amounts of water above the wilting percentage (recently irrigated) the reduction in fruit growth rate was less for the summer pruned trees than for trees with the normal amount of foliage.

"Examination of the fruit obtained in the first picking of my Bartlett black-end plots show equal amounts of hard-end (initial stage of black-end) and black-end on unpruned, winter pruned, and summer pruned trees.

"These plots had become low in soil moisture during the three weeks preceding harvest and showed no greater rate of fruit growth on the summer pruned trees."

"At Hood River, I found a 3,000 ton Bartlett crop and a relatively light Anjou crop," he had written on July 23d.

"The Anjou crop has suffered from three things: (1) Cool rainy weather at blossom time, (2) a serious pear scab infection, and (3) spray burn on the fruit, resulting from an attempt to control pear scab. In many orchards where the Anjou trees were planted 25 x 25 feet, there was a very light crop of fruit on the lower limbs. Although in many cases this may have been partially due to frost, I was convinced that in general the light set on lower limbs was due to insufficient light. In general, Anjou tree vigor was much greater than the average for the Rogue River Valley.

"In Yakima most Anjou trees were carrying a medium to heavy crop. There also I observed the light crop on the lower limbs, apparently resulting from insufficient light. I examined many Bartlett orchards, most of which were on Jap rootstock. The Bartlett crop was only moderately heavy and the fruit showed a rough surface, similar to that occurring in the Rogue River Valley in 1933. I saw very little 'black-end' on these trees with Jap rootstock; and where it occurred, nearly all the fruit on a tree was affected.

"On my return trip I examined in company with Mr. O. T. McWhorter, demonstration peach pruning plots in non-irrigated orchards at the Dalles. Here also I saw sweet cherries which showed almost complete recovery from 'little-leaf.' following zinc sulphate injections in mid-summer of 1934."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"The orchard of Mr. E. E. Tuck, Thomasville, Ga. was visited," he writes from the U. S. Pecan Field Station and Laboratory for the week ending June 30th. "Mr. Tuck had treated 75-100 large pecan trees with zinc sulphate for the control of rosette. He used the dry salt insertion method and when observed, the trees showed remarkable recovery from rosette.

"The orchard of Mr. J. Slater Wight at Cairo, Ga. was also visited to see the scab infection on Frotscher pecans. This infection was so severe that it is very questionable as to whether or not he will be able to save the crop by spraying. Frotscher has scabbed some in the past at Cairo, but never before has it been serious enough to destroy the crop."

C. P. Harley, Wenatchee, Wash.

"The Wenatchee Valley still has prospects of a good crop of apples this year," he writes on July 26th.

"The latest estimate given by the Wenatchee Valley Traffic Association was 17,598 cars. This is about 1,000 cars less than an earlier estimate.

"The codling moth battle is getting stiffer each week and there is every likelihood of a third brood this year. Recent observations in orchards that were relatively clean up to this point show many new entries and the percent of culls will possibly be higher than normal. Late infestations of red spider and two spotted mite, etc., are also taking their toll. Our experimental block in soil moisture and nitrogen studies contains a few Delicious trees and these were badly infested. They have been sprayed, however, and our Jonathan trees are practically free now from the mites. Three pounds of nitrate of soda per tree were applied on July 17th to the cork spot plots at Malaga and on July 18th, 6 pounds of sulphate of ammonia were applied to certain trees in the Dougherty experiment. No corking is evident yet in any of these orchards."

C. E. Schuster, Corvallis, Ore.

Writing on July 21st, he reported: "Some exceptionally good results have been obtained in filbert pollination work, and it is evident that some of the pruning work is beginning to develop along the lines anticipated. So little work has been done on pruning of filberts that it has to start almost from the ground up."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"In the Valencia orchards that are near the sea, "he wrote under date of July 23d in describing a visit to several Valencia orchards and packing houses in Orange county, "we found very few seeds, perhaps one-half of the fruits cut were seedless and the remainder had only from one to three seeds each.

"This observation, in connection with those reported last spring, indicate less seediness in Valencia oranges grown near the sea as compared with those produced farther inland. The observation of this peculiar condition will be continued as opportunity permits."

Atherton C. Gossard, Spring Hill, Ala.

Writing from the U. S. Pecan Field Station of Spring Hill on July 21, he says: "Saturday morning, Mr. Parson and I visited our joint rosette experiment in Mr. C. H. Dees' orchard near Grand Bay, Ala., and took notes on it.

"Last year no results from the zinc sulphate treatments were evident. This spring we repeated our soil applications and injected the chemically pure zinc sulphate into the trunks of three trees. This summer a striking improvement is evident on all trees, both the soil treated and the injected trees. The trees which were treated with 20 pounds of zinc sulphate per tree each of the past two springs show very little signs of rosette. Those which have had two annual 5-pound treatments are nearly as much improved. The injected trees are considerably less improved but have decidedly less rosette than the checks. All the checks are severely rosetted."

National Arboretum With completion of the purchase by the Federal Government of 386 acres for the National Arboretum in the northeast quarter of the District of Columbia, contract for a topographical survey of the area has been awarded. This survey is supplemental to a photographic aerial mosaic and will furnish data for a map showing contours at one-foot intervals for use by the Bureau of Plant Industry preliminary to completing plans for roads, trails, and buildings. It is made possible by an allotment of \$10,000 from the Public Works Administration. Adjoining lands previously in Government ownership are expected to be added to the purchased land so as to bring the total area of the National Arboretum to approximately 800 acres.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"The freezing work this season so far has included a study of the adaptability of six different varieties of plums to freezing, a similar study with five varieties of nectarines, and so far five varieties of peaches which have sufficient quality to warrant trial have been frozen," he writes July 28th. "Other fruits that have been included in our study this season are locally grown Marshall strawberries, red raspberries, Young dew-berries, blackberries and figs."

"In the Santa Clara Valley, pear washers were being overhauled and prepared for the sixth season of operation. Much of this equipment, when properly cared for, has needed only minor repairs. In 1927 when washing equipment was installed, no one was willing to predict that it would last more than a season or two and the actual experiences with this equipment is of interest.

"A washer was developed last season by a San Jose firm to wash pears intended for eastern shipment, the pears having been dusted with calcium arsenate, I believe. One-tenth per hydrochloric acid was effective, and the equipment consisted of a pear washer in which the rubber-covered rod conveyor had been replaced with a slatted, shaker-type conveyor. Ice was used in the rinse tank and some cooling of the pears obtained during the washing process.

"Calimyrna figs are being shipped to eastern markets, with rather low prices prevailing, resulting in freight shipments rather than the usual number of express shipments. Tests are being made to get temperature records and carrying quality under freight shipment. Additional trials with carbon-dioxide treatment are being included."

Frozen Pack. THE FORECAST for July is quoted in our Daily Digest in connection with an interesting marketing and distributing experiment being conducted by the Fruits Products Committee of the Canadian Department of Agriculture in conjunction with the Ottawa Dairy. The dairy drivers will now take orders for frozen strawberries and raspberries in one-pound containers, making delivery the next day. This fruit has been processed and frozen at the Experimental Farm and handed over to the Ottawa Dairy for distribution. The product is of high order and in the opinion of many surpasses the flavor of fresh fruit. The sale price is 25 cents per carton.

Surpasses the flavor of fresh fruit! Do you know, some of these days the advocates of frozen pack are going to reach a point where there will be nothing further for H. C. Diehl to say!

ON THE RIPENING OF FRUITS

We are pleased to find one of our distinguished contemporaries, the Gardeners' Chronical of London, issue of June 30, taking notice of the work of our colleagues, Dr. J. S. Caldwell.

"....The most illuminating of all contributions to the ripening of fruits," it says, "is that made recently by Joseph S. Caldwell (Bureau of Plant Industry) in Technical Bulletin 403 of the United States Department of Agriculture.

"Why should young apples be so hard and get so viciously acid before they reach a sweet and ripe old age?

"Some have seen in this tartness of the immature a protective device—a sort of 'hands off' declaration ensuring its immunity from premature destruction by animals; but Mr. Caldwell sees in the rapid increase of acidity a deeper significance. He holds, and we think rightly, that the sourness is not only the harbinger but also the begetter of ripeness. For so soon as acidity begins to increase the fruits begin to swell. The tree, willy nilly, is constrained to supply them copiously with water and the fruits increase in weight and size. Why this should be so is not at all self-evident; but Mr. Caldwell supplies the explanation.

"The thick walls of the fruit are mainly composed of substances which have properties similar to those of a jelly or glue; and so also have the living contents of the cells. These, the pectose and the protoplasm, are colloids, possessing most imperious powers of absorbing water. Jelly-like colloids such as those of fruits can only exercise fully their power of imbibing water in an acid medium, and the more actively acid the medium is, the more water they can absorb. And so by piling up acid in itself the fruit makes short work of, and turns to nought any resistance which the tree might offer to yielding up water to its young....."

We are glad to quote this tribute, not merely because it is deserved, but to give those of you who may have sampled young apples not wisely but too well a clear understanding of the causes underlying certain results; though it is true, of course, that you have already had a certain amount of inside information on the subject.

ADMINISTRATIVE NOTE

When claiming subsistence allowance for trips for fractional parts of days where departure from headquarters is before 8:00 a.m. or return thereto is after 6:00 p.m. it is necessary to submit an explanation showing why it was impossible to make the trip between the hours of 8 and 6. This explanation is required by the General Accounting Office in view of the regulation which prohibits the allowance of subsistence for trips made between 8:00 a.m. and 6:00 p.m. Supplying these statements with your accounts will prevent suspensions.

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"The temperatures the entire week have been abnormally high and certain of the apple varieties are beginning to show high temperature injuries," he writes for the week ending July 21. "At the present time the Ada Red variety is badly injured in some orchards.

"A peach grower at Springdale is trying to circumvent the drought by a rough system of irrigation in his eight-year-old Elberta orchard, which covers approximately 8 acres. Fortunately he has access to the city water mains and by running a fire hose (loaned to him by the city officials) from a tap on the water main to the highest spot in his orchard he can send water over the entire orchard by a series of dams and channels. He divides the orchard into three sections and it takes 40 hours to water the entire orchard with a flow of 4,500 gallons an hour or a total of 180,000 gallons for a treatment. He has irrigated his orchard three times and with a 3,000 bushel crop (his estimate) in sight he feels that a water bill of \$150 plus some labor in handling the dams, is going to prove a worthwhile investment."

Howard E. Parson, Spring Hill, Ala.

Writing from the U. S. Pecan Disease Field Laboratory at Spring Hill on July 21, he says: "Mr. Demarce made a visit here July 18 and 19. On visiting rosette experiments carried on by A. C. Gossard and myself, it was interesting to note that after two years' fertilization with zinc sulphate there is unmistakable response to the treatment, whereas no response could be noted last year.

"The response was not quite so good with 5 lbs. zinc sulfate as with 20 lbs. Trees injected with 50 grams C. P. zinc sulfate this year only are responding to the treatment almost to the same extent as trees fertilized with 5 lbs. for two years.

"The difference should show up more strikingly later in the season when die-back begins in the trees. Trees in this orchard were rosetted as severely as any in this section; large trees were badly deformed and stunted from severe die-back and some small trees died. At one time the orchard was lined with oyster shell meal at the rate of 6 tons per acre. Since lime appears to be a contributing factor in nearly every case of rosette we know in this section, and response to zinc sulphate is showing up against such odds, it is expected that a great deal of interest will be shown in this demonstration."

FRUIT DISEASES

Zinc Dr. M. B. Waite gives in the Department of Agriculture Yearbook for 1934, just being distributed, a summary of the use of zinc in the control of some plant diseases.

Salts of zinc have long been known to be germicides and fungicides, he points out, but owing to their mildness they have been neglected in favor of copper and sulphur compounds by plant pathologists searching for effective fungicides. Recent discoveries, partly accidental, have shown the value of zinc in the control of at least two types of plant diseases.

From 1928 to 1930 our specialists tested out fully two hundred different kinds of fungicides in an attempt to find a remedy for peach bacterial spot, for example. Practically all were ineffective or even injurious. Then came the zinc-lime mixture (4 pounds of zinc sulphate and 4 pounds of lime to 50 gallons of water) giving good control without injury to foliage or fruit. In fact it stimulated the trees and larger, darker-green leaves followed its use.

In the case of the disease known as pecan rosette, our studies showed it to be noninfectious and a nutritional trouble resulting from soil conditions, and it was found that humus-forming mulch or cover crops gave partial control.

California experiment station workers, experimenting with apple rosette, a nutritional disease resembling pecan rosette, were successful with iron sulphate applied as a fertilizer, but found that the beneficial results were due to 1 per cent of zinc carried as an impurity.

"The Department of Agriculture workers," he explains, further, "who had also been using iron sulphate (both ferric and ferrous) successfully in a small way against pecan rosette, had dissolved the chemical in a galvanized-iron bucket and found the beneficial agent to be a zinc impurity derived from zinc in this container.

"Further experiments in 1930 and extending through 1931-2-3, showed that zinc sulphate applied as a spray in dilute solution, injected into the trunk, or applied to the soil like a fertilizer, would cure the disease.

"Zinc was thus proved to be one of the few materials that can be used in the successful treatment of diseased trees by injection."

Waite, M. B. Zinc Prove Useful in the Control of Some Plant Diseases. Yearbook of Agriculture, 1934, U. S. Dept. Agr. pp. 380-382, 3 figs.

DISEASES OF ORNAMENTALS

Frank P. McWhorter, Corvallis, Ore.

"I recently completed a trip to southern Oregon where especial attention was given to the important general ornamental planting in the Brookings vicinity," he writes July 20th. "Calla plantings there are diminishing because of trouble often encountered in shipping the 'bulbs.' We feel that these troubles can be eliminated by radical changes in the method of curing and distribution, and are making a first start on a practical experimental basis to determine the feasibility of shipping the 'bulbs' east in a somewhat green condition instead of delivering them as dried-out root-like entries.

"In this same region, there has developed an extensive planting of *Lilium philippinense*. The cultivation and sale of this particular kind of lily has there been attended with such success that by next year the planting of these bulbs will cover several acres. This planting has been built up during a period of only four years.

"Recently I was called to Portland to visit the important planting of seed pansies grown in the Portland area. One operator there produces the major part of the pansy seed marketed in the United States. His crop, and judging by the remarks of his wife, the grower himself, has been recently afflicted with a malady which he describes as new to pansy growing. The trouble proved to be a serious invasion of eastern Oregon leaf-hoppers, and the resulting disease curly top. At my request Mr. Dana was called in for a study of the unusual situation and he will report on the matter in detail.

"Mr. Millsap is busy these days 'boiling' out virus-free narcissus bulbs. We now have thousands of bulbs of such varieties as Talma and Sir Watkin, which we have reduced from the high percentage of mosaic present in ordinary commercial stocks to percentages which are expressed, according to our 1934 record, as 0.18 and even less in blocks of two to three thousand bulbs.

"In connection with the digging of known mosaic stock, Mr. Millsap has gotten further data on the debated question of whether there may be any direct relationship between the form of the bulb and the severity of the mosaic produced. This year's results indicate no relation whatever in reference to shape. It is true, however, that virus diseased bulbs in most varieties average decidedly smaller than their healthy brothers.

"Our industrious inspectors continue to search for nematodes. There are a number of large plantings in Oregon this year in which the inspectors have been able to find not one single trace of nematode infestation. We feel that the pre-soaking method now being generally introduced this season, may further aid in the complete 'extinction' of this pest from important bulb plantings."

Pineapples and Apples. There seems to be a good bit more of an affinity between apples and pineapples than the average person might believe. At least they are showing a tendency to work well in harness, to judge from a recent discovery made by Dr. A. K. Balls and Walter S. Hale of the Food Research Division of the Bureau of Chemistry and Soils. They found that apples will retain their original color if immediately after being cut they are sprayed with pineapple juice.

Fruit growers and handlers have long been concerned over the tendency of many fruits and vegetables to darken at freshly cut surfaces, and commercial fruit driers have been meeting the situation by treating the material with sulphur dioxide. The dried fruit after "sulphuring" has a good color, but still contains considerable sulphur dioxide, objectionable to many consumers. The dried fruit industry has thus been in search of a satisfactory substitute for sulphur dioxide--and horticulture appears ready to supply it.

Very little untreated dried apples, pears, and apricots are marketed, the Press Service release announcing this discovery points out. Sliced apples, for example, if untreated retain their original color for only a few minutes, and by the time they have been left in the air long enough to dry, they are usually a deep brown. Or am I telling you?

This change in color represents a money loss to the handlers as such dark-colored products do not meet with any particular enthusiasm when they reach the markets, probably because it is impossible to prepare from them an article of food which even remotely resembles the original fruit in respect to color.

Doctor Balls and Mr. Halex started out to find a method of preventing discoloration of cut fruit which could displace the "sulphuring" process. They went along down the line of chemicals and since they knew that the natural activator of the proteolytic enzyme in pineapple juice was also a sulphhydryl compound related to those already tried, they sprayed some of the test fruit with pineapple juice. The result was the same as with the chemicals, so far as inhibiting the color formation was concerned.

"This fruit, dried after spraying with pineapple juice," explains Doctor Balls, "was covered with a thin film of dry residue from the juice. I do not see that this is objectionable. But it may be quite easily avoided by first fermenting the juice, removing the yeast and alcohol, and using the greatly purified liquid in the spraying process. The alcohol recovered more than pays for the cost of this chemical treatment."

Dried apples, treated with pineapple juice, have been held for many months and are just as white now as when first treated.

ADMINISTRATIVE NOTES

Transportation Requests Lost. Under date of July 30th, Comptroller General McCarl sent a memorandum to officials of departments and independent establishments, and others concerned, in regard to transportation requests reported as lost. "It has come to attention that Government transportation requests which have been reported lost or stolen," he writes, "in accordance with paragraph 36 of Standardized Government Travel Regulations, as amended, approved by the President, January 30, 1934, are, upon subsequent recovery, being used by Government employees after such loss or theft has been reported by this office to representatives of passenger associations with the request that the carriers in their respective territories be notified not to honor such requests.

"In order to avoid any misunderstanding, it is requested that when Government transportation requests, the loss or theft of which has been reported to the General Accounting Office as required by the Standardized Government Travel Regulations, supra, have been subsequently recovered, they should be sent immediately to the issuing officer for cancellation."

DO YOU KNOW--that in making out pay roll vouchers a deduction of only 5 per cent should be made, in view of the fact that during the present fiscal year a salary deduction of but 5 per cent is in force? We have lately received a number of vouchers calling for a 10 per cent reduction, and one or two for 15 per cent!

That--the total amount due the employee should be listed on the pay roll immediately after his name--not opposite the address or below the address. Mistakes have been made by the check writers in the Disbursing Office due to the amount being in the wrong place on the pay roll. Therefore, where pay rolls are received with the amounts in the wrong space it is necessary for us to rewrite them.

That -- pay rolls should be checked carefully to see that the total time for which claims is made checks with the time itemized in the "Remarks" column. We are receiving quite a few vouchers which do not seem to have been checked in this respect before being sent in.

That--field men may personally sign U. S. Production Certificates where the amount involved is \$1.00 or less.

That--care should be taken to see that Form 1034 vouchers are either properly stamped with the Production Certificate stamp or are accompanied by a signed Production Certificate. We can supply stamped vouchers or mimeographed certificates for your use. Write to Mr. R. K. Swartz.

ADMINISTRATIVE NOTES

On Preparing
Illustrations
For Printing.

Instructions for authors proposing to letter or otherwise label illustrations before sending them forward to the printer: Don't! Occasionally an author tries to label or letter the illustrations sent along with his manuscript. Presumably he does this because he wishes to be sure that the material goes forward in the exact form in which he desires to have it appear in print. He overlooks the fact that his labeling may fall somewhat below the standard set by the Section of Illustrations, a standard to which our publications are expected to conform. Even where the labeling is well done, the author is almost certain to find that the printed page will reveal a lack of harmony. Sometimes the letters and figures stand out a good bit more prominently, for example, than the illustration itself.

Where gummed letters or figures are pasted on the illustration by the author the workers of the Section of Illustration may realize that there is a lack of harmony, etc., but find it practically impossible to remove the gummed characters and reletter the illustration. Taking off gummed figures or letters leaves marks or stains which cannot be erased or covered up in a manner to prevent their showing up plainly in the printed illustration. So, the Section of Illustrations asks that authors send along their illustrations in the form desired, but not pasted or marked (except lightly in lead pencil), accompanied if necessary by a layout showing the arrangement preferred. If we get him mad enough, it is quite likely that J. H. Stevenson, who is in charge of illustrations, will prepare a memorandum telling us just how to handle illustrations in preparation for printing, but until such event, I hope these few lines will--serve--you well!

As to photographs: They may be sent loose, enclosed in envelopes, or mounted on ordinary 8x10-1/2 inch typewriter paper by inserting their corners in slits cut in the paper. They shouldn't be pasted or clipped, as the clips sometimes mark them up enough to make them rather unfit for use. The title of the manuscript and the figure or plate number should be written lightly in pencil (never typed) on the back of the photograph. The title of the manuscript should also be typed in the upper lefthand corner of the sheet or which the photograph is mounted, and the legend typed just below the photograph--on the 8x10-1/2 sheet, not on the photograph itself!

Illustrations should be numbered with Arabic numerals (plates and text figures separately) in order of mention in text. When two or more illustrations are grouped on one plate or figure, the parts should be designated A, B, C (not Figure 1, 2, 3). Further subdivisions should be marked a, b, c. And, as intimated above, lettering on the face of the illustration should be done tentatively only, in lead pencil, and the finished lettering left to the Section of Illustrations.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI Washington, D.C., September 1, 1934 No. 17

Vegetable Growing. In a talk before commercial vegetable growers at Amherst, Mass., during the Massachusetts Agricultural Experiment Station and Agricultural College Farm and Home Week, Dr. Victor R. Boswell, told of some of the things the Division is doing for the vegetable grower, and in particular discussed recent developments in connection with our work.

One of the most important lines of endeavor is the development of new and improved varieties by breeding and selection, he pointed out, this work having two major purposes -- the successful combating of diseases and the obtaining of products that are more valuable to the grower and to the consumer. "There is little doubt," he said, "that our most important single problem in the production of vegetables today is the economically successful control of certain plant diseases. As the culture of crops becomes more intensively concentrated in certain areas, and there is a more and more free exchange of plant materials and a more rapid spread of diseases accompanying our highly developed transportation system, certain diseases are rapidly increasing in their distribution and severity. Some of these diseases cannot profitably be controlled by any method of spraying or dusting that has been developed so far. The most practical method of attacking certain such trouble is through breeding new varieties that are resistant to the diseases in question. It is very rarely that we are able to find a new strain or develop one which is entirely immune to a disease, but from a practical standpoint this is not necessary. If varieties can be found or developed by breeding and selection that show a high degree of resistance to a certain disease even though they may 'take it' to some extent, commercially profitable crops can be grown.

"The ever increasing keenness of competition between growers and the increasing demands of consumers for products of really fine quality, make it important that we obtain new varieties of superior market and table qualities. Many of the older varieties that were formerly considered quite satisfactory are now hopelessly out of date and often bring lower prices than the better sorts."

He cited the case of the Marglobe tomato which we introduced some ten years ago. This variety was developed with the ideal of meeting the requirements of the southern winter tomato area for shipping northward and its adaptation to numerous regions almost all over the country came as something of a surprise, demonstrating that a variety developed by work done in one part of the country is not necessarily of interest only to that locality or region. The Marglobe was developed primarily, however, to obtain a variety resistant to Fusarium wilt and to Nailhead rust. It is resistant to both. Breeding work on tomatoes is continuing and the Fusarium wilt problem is being attacked with greater force than ever before. With the phenomenal increase in consumption of tomato juice there has been an increased demand for tomatoes specially adapted to juice manufacture, and we are testing and selecting progenies from crosses made a few years ago in attempts to develop disease resistant sorts especially for juice manufacture.

"Bearing in mind what was said a moment ago about the ever increasing spread and severity of certain diseases," said Doctor Boswell, "it should be noted that cabbage yellows is becoming an important factor in many places where it was entirely unknown a few years ago. In cooperation with the Wisconsin Experiment Station we developed several years ago the yellows resistant variety of cabbage known as Wisconsin Hollander. This was intended to replace Danish Ballhead in the late cabbage growing regions where yellows was severe. Although the variety was somewhat rough and lacking in uniformity, not so attractive as the best strains of Danish Ballhead, it saved the cabbage industry over a considerable territory where yellows was so severe that other varieties could not be grown. As the disease has become increasingly severe in other areas, additional yellows resistant varieties have been developed, each a disease-resistant counterpart of a commercially important susceptible sort. Now that there is available a resistant variety of each of the important commercial types, we are going back over the field, making further refinements and improvements in the new sorts...."

"There is little doubt that the great and increasing severity of various virus diseases of potatoes is the greatest single difficulty in potato production in this country today. We have introduced two varieties resistant to Mild Mosaic; another has been found that is strongly resistant to scab, and there are a number of seedings that show marked resistance to late blight. Although we cannot expect results in a year or two, very definite and encouraging progress is being made toward getting potato varieties that show a degree of resistance toward each of a number of different diseases.

"One of the most outstanding instances of the salvation of an industry by plant breeding methods is the work done in the development of disease resistant varieties of lettuce. Brown Blight and Mildew at different times and sometimes occurring together, threatened the southwestern lettuce industry. Plant breeding and selection were successful as means of developing varieties not only resistant to each of these diseases separately but there are now available strains of lettuce which are double resistant, or resistant to both. It has been estimated that 90 per cent of the commercial lettuce area of the Southwest is now planted to these new disease resistant varieties.

"The east, as well as the west, grows lettuce although the amount grown in the east is far less than that grown in the west. This is true largely because we do not have varieties that will stand the climatic conditions in the east. The disease resistant varieties mentioned and which are so perfectly successful in the west are not at all adapted to eastern culture. One of our men has been working on the development of new varieties which will form large heads and which will be resistant to tipburn in the eastern United States. The outlook is promising.

"As with lettuce, most cantaloupe, shipments originate in the Southwest. Also, certain diseases, particularly Mildew, are causing a great deal of trouble. In cooperation with the California station we have developed strains of cantaloupes showing marked resistance to mildew.

"Although growers in the northern and northeastern part of the country are not particularly interested in the sweetpotato crop, "said Doctor Boswell, as a sort of aside comment, "it should be recognized that this is the most important of our vegetable crops next to potatoes and is one of, if not the chief money crop, of a great many growers in the Middle Atlantic and Southern States....The sweetpotato is attacked by a form of fusarium wilt sometimes called blue stem, a disease which cannot be controlled by spraying, dusting or seed treatment. We have for years studied varieties and strains from different parts of the world and among them we have found some not only resistant but apparently immune to fusarium wilt or stem rot. Most of them, however, are a bit rough in appearance and some of them not especially attractive in color, but a few are of decided promise. Although the demand for these new varieties has not been great so far, it is quite probable that the increasing prevalence of sweetpotato wilt will force more and more growers to use disease resistant sorts if they are to continue growing the crop. We hope to be ready to meet the demand for such resistant varieties when it comes."

Doctor Boswell emphasized the fact that while the breeding of resistant sorts seems to be the most satisfactory method of fighting diseases, the growers are not in a position to wait several years for the development of new varieties when disease threatens the destruction of standard sorts. Any and all known methods of control must be used. Then if disease resistant kinds are produced, the less efficient control methods can be discontinued.

Our specialists, therefore, are working extensively and intensively in the study of the nature and methods of control of plant diseases. In a majority of cases, perhaps, it is essential that the nature of the disease be understood thoroughly before control methods can be developed. One of the most remarkable of recent developments is the finding of a method to control bacterial canker of tomato which has caused very serious losses in the past few years. Cooperating with the Utah Agricultural Experiment Station, we discovered that a return to the old-fashioned method of fermentation in the saving of tomato seed will control about 100 per cent the transmission of bacterial canker in the seed. Careful seed bed sanitation also helps. A few years ago the whole tomato growing industry was wondering whether it might not be overrun by this rapidly spreading bacterial canker disease. This recent discovery means that the disease can be practically entirely eliminated and needs no longer be a factor in most of the important potato growing regions.

Another plant pathologist in the Division discovered that a form of Mosaic affecting celery in Florida was also generally to be found upon a particular wild plant or weed. Further studies have shown that the disease carries over from year to year in this weed and is transmitted from the diseased weeds to the healthy celery plants by plant lice. It appeared then that if it were practicable to control this weed in the immediate vicinity of celery fields, it should be possible to largely eliminate that form of mosaic on celery in that section of Florida. Weed control campaigns under the guidance of our workers have thoroughly demonstrated the practicability of obtaining commercially satisfactory control of the disease by this method. Still later studies have shown that the mosaic affecting this particular weed may be spread to a large number of other truck and other crop plants, and even to a number of wild plants. So, this most important discovery and method of disease control will save vegetable growers in that one area alone hundreds of thousands of dollars.

Of course, the growers' fight against disease does not end as soon as he has harvested a successful crop. In these times of producing for distant markets, several days usually elapse and sometimes months, before the crop reaches the consumer. During this interval there is plenty of time for numerous diseases to cause severe loss. Many of these diseases have their origins in the field but do not show up until the product has been started to market--which means that thorough disease control in the field is of primary importance. At the same time, however, many of the so-called transit and storage diseases can be held in check by proper methods of treatment after the product is harvested. Numerous workers of the Department are spending their entire time in efforts to conserve harvested products and insure their reaching the consumer in a sound and wholesome condition. They are interested not only in developing methods that will best prevent deterioration of the product, but in devising the cheapest and simplest possible methods for attaining this end.

"The great increase in the practice of precooling and the use of carbon dioxide or dry ice in the shipping of fruits and vegetables greatly reduce icing charges and get the product to markets in better condition than was possible under the older methods of handling. The most outstanding developments along these lines have been with reference to the transportation of fruits, but the principles involved are also of interest to the vegetable growers. For example, work on the precooling and shipping of asparagus, cantaloupes and lettuce is now under way and although the results are so incomplete that definite recommendations cannot be made, they are very promising.....

"What was good enough for our grandfathers and our fathers may not be good enough to suit us and the generations to come," Doctor Boswell declared. "There is an increasing drive to obtain better and better vegetables. We have already mentioned how the plant breeders and plant pathologists are working to obtain better products. There is still another group of workers who are studying another type of problem in efforts to correct still different difficulties with our vegetables and vegetable crops. All of you realize that at times crops in the fields or harvested products suffer abnormal development or deterioration which is not due to the variety nor to any virus or to bacterial or fungus organisms.

"In efforts to understand the development of poor or otherwise abnormal growth such as the breakdown of tissues or the malformation of fruits, leaves or other plant parts, the plant physiologist carefully studies what goes on in normal and abnormal plants in a way more or less comparable to that used by our own doctors. When a plant remains stunted in size and fails to produce a crop is it because its food isn't right, because it doesn't get enough light, or because the temperature isn't right? You might be surprised at some of the remarkable differences in plant growth that are produced by comparatively small varieties in plant food, in water supply, in length of day, brightness of light and in temperature.

"There have been, for example, erroneous notions that the use of potash in fertilizers on peas would cause the peas to be hard and starchy. Our workers have carefully studied this problem from a chemical standpoint and have definitely shown that under some conditions at least there is no significant difference produced in the compositions of peas of a given grade nor any significant difference in grades of peas treated with potash. The application of nitrogen, however, did alter the composition of the peas, causing them to possess the characteristics of younger peas.

"Studies are under way at the present time to determine some of the effects of soil texture, temperature, rainfall and fertility on the quality and shape of roots of beets and carrots. This problem is of particular interest not only from the standpoint of producing the highest quality market

product but also because it has an important bearing on the expression of varietal characters. In other words the Crosby Egyptian beet described by a grower or seedsman as having a certain definite appearance may appear distinctly different under more or less adverse soil and climatic conditions. Cucumbers are particularly susceptible to unfavorable environment. Growers have had the experience of harvesting a crop of cucumbers distinctly unlike the variety that they purchased and have immediately concluded that the seedsman was at fault. It is true, of course, that errors are sometimes made in filling orders, but it is also true that under certain adverse conditions some varieties of cucumber may appear to be some other variety and turn out to be quite unsuited to the purpose for which they were grown. Studies are under way at the present time with a small number of the most important varieties to determine in a preliminary way the causes and exact nature of some of these unusual growth responses.

"How much hot weather can a crop of spinach or onions stand? Will it stand more hot weather when the days are short than when the days are long? What varieties are particularly adapted to a given set of climatic conditions? Our varietal standardization and description work is yielding very valuable data upon just this type of question. In the course of a few more years when we have collected more data on a wide variety of crops we will be able as never before to predict the probable success of a given variety in any one of a large number of different regions in the United States.

"One of our plant physiologists is preparing for publication a report of the results of a most interesting and significant study relative to the responses of tomatoes to different fertilizer, moisture, temperature and light conditions. Despite the enormous amount of work that has been done both by the Government and by the various State experiment stations relative to the physiology of the tomato and factors that affect its growth and fruitfulness, a number of new and important points have been found which have a direct bearing on the control of such troubles as failure to set fruit, blossom end rot, fruit wall breakdown, and puffiness. These results will be of particular interest to greenhouse men, but also to market gardeners and truckers. Another worker has shown how the germination of onion seed can be maintained practically without loss for more than four years. Do you know what causes potato scald? Do you know that exposure to light for but a few hours on a bright day plays havoc with newly dug potatoes? No, it isn't the heat; some of our workers have shown that it is the light that does the damage. Our potato specialists, too, are studying new methods of planting and (in cooperation with the Bureau of Chemistry and Soils) new methods of fertilizer placement that may reduce production costs for a great many growers and reduce damage from nearness of the fertilizer to the potato seed."

Owing to the limited time at his disposal, Doctor Boswell could not go into many details concerning the work he is conducting under the vegetable standardization and description project. However, since it speaks very well for itself, his brief comments were probably sufficient for the occasion!

In an effort to reduce the present chaotic variety situation to some semblance of order, he said, we have in cooperation with about 20 State experiment stations, been studying for the past five years the characteristics of the best obtainable stocks of the principal commercial varieties of vegetables.

"On the basis of the best opinion obtainable from technical specialists, growers and seedsmen, a standard is being established for each variety and this standard is thoroughly described and illustrated so that seedsmen, growers and dealers can bring their ideas of a variety into agreement and deal with each other on the basis of varietal name with confidence. Of perhaps equal importance in this work is the determination of certain unavoidable variations in appearance and behavior of varieties that are due to the conditions under which they are grown in widely separated areas in the United States. Results have been published upon tomatoes, cabbage, and peas: field work is completed on carrots, beets, and spinach; and work is in progress on onions, turnips and rutabagas."

This standardization and Description work, of course-- and it is the editor, not Doctor Boswell speaking now (he just couldn't keep silent any longer!)-- is one of our tailored-to-order jobs, the investigations being undertaken in response to the demands of the industry and hence designed to meet special needs and accomplish definite ends-- one of which will probably be the saving of approximately \$4,000,000 a year to the vegetable growing industry of this country.

Incidentally, the enlisting of growers, seedsmen, State experiment station workers and others in this work has emphasized the manner in which Federal research activities dovetail in with the work of the experiment stations.

"The Department," explained Doctor Boswell, "is interested primarily in problems of national scope or which involve large areas of the country and works upon those problems very largely in cooperation with State stations that are also interested in them. Our interests are broad and we cover a lot of territory, but we don't forget, and you mustn't forget, your own State stations. In a great many cases they are in a much better position to know your local conditions and problems than we are. They are just as eager to be of service to you as we are, and deserve your cooperation. After all, State and Federal research workers are, to a certain extent, all parts of a great research organization designed to make agricultural work less difficult and life more livable for everyone."

In this talk, Doctor Boswell mentioned appreciatively the work being done for the vegetable grower by various other bureaus and divisions of the Department, including in particular the Division of Plant Exploration and Introduction, whose members literally travel the world over in search of plant materials not to be found in this country and which is likely to be of value either as found, or for use in breeding work.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"Studies on the brown-stain disorder of filberts were also carried on," he writes for the week ending August 4. "Surveys were made in a number of filbert plantings in the Willamette valley and the percentage of nuts affected with brown-stain determined. This trouble was present in only very limited amounts in most orchards visited. In no case did the loss from this disorder exceed more than 1 per cent of the crop. Attempts made to isolate some parasitic micro-organism from a number of affected nuts were negative. The results of these isolation attempts confirm previous studies on the cause of this disorder, so that it seems practically certain that this trouble is non-parasitic in nature.

"Studies on filbert shrivel, another disorder affecting the nuts, were also carried on. This disorder was found in varying amounts in all orchards and in all varieties examined. It was more prevalent, however, in the Brixnut variety than in any other variety of filbert examined. For example, in one Brixnut orchard (grafted on Barcelona seedling roots) near Gaston, Ore., 12 per cent of the nuts examined were found affected with this disorder, while in Barcelona trees (tip-layered stock, trees on own roots) growing in the same planting, only 1.2 per cent of the nuts examined were found affected with shrivel. It was further observed in this orchard that nuts on Brixnut trees in poor vigor (due to cankers on the trunks) were much more subject to this trouble as is indicated by the fact that approximately 24 per cent of the nuts examined on such trees were found affected with shrivel, while only 12 per cent of the nuts on healthy Brixnut trees in this orchard were found so affected. It would seem from this observation that the condition of the tree may play some part in the development of this trouble. Attempts to isolate a causal organism from nuts affected with shrivel were negative, indicating that this trouble, like the brown-stain disorder, is non-parasitic in its nature.

"Filbert mildew, due to Phyllactinia coryli (Pers.) Karst. is becoming abundant in orchards in certain sections of Oregon on leaves of Corylus avellana, the cultivated filbert. This disease is present only on the under surface of the leaves, and in a few cases is causing premature leaf dropping. For the most part, however, the affected leaves do not seem to be suffering acutely from the disease, as they are still dark green in color and are persisting on the trees. It is thought that the lateness of the attack is probably responsible for the small amount of damage which has seemingly occurred.

"On August 2 and 3, the Western Nut Growers' Association held its tour in orchards in and about Corvallis, Ore. Studies on nut culture and diseases carried on by Mr. Schuster and the writer were featured on this tour. The growers displayed great interest in Mr. Schuster's studies on

FRUIT DISEASES

Paul W. Miller (continued)

soil moisture in walnut orchards and in filbert sucker control. Considerable interest in our studies on walnut blight and its control was also manifested by the growers. The results of our spraying tests for the control of walnut bacteriosis were so striking as to convince many walnut growers that spraying with Bordeaux mixture at the proper time will yield paying results. After the tour many growers indicated their intention of spraying for blight next year."

M. A. Smith, Springfield, Mo.

Writing from the Ozark Fruit Disease Laboratory on August 18th, he says: "It is a relief to be able to write that the drought in the Ozarks is finally broken. Last Saturday 1.2 inches of rain fell at Marionville. We received .59 inches of rain yesterday, and it has been raining steadily today. A week ago we examined a number of apple orchards which have been irrigated during the last month. Without exception they are in good condition, and a good crop seems assured. In one block of Delicious the fruits are already 2-1/2 inches and still growing. During the past month many trees have died. Many of those which we have examined are infected with Blister canker-- a large percentage of the trees which are dead or dying are of the variety Ben Davis. Grape harvest in the Republic district has been under way for several days. The Moores Early variety seems to have stood the drought extremely well. Concords in some vineyards have begun to show some shriveling--due to lack of water."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"During the week the second picking of Bartlett was fairly well completed throughout the Valley," he writes on August 6th. "A few growers started picking Howell, and one grower started on Anjou. This Anjou picking is probably earlier than desirable for best fruit quality. The briefness of our only hot period seems responsible for continued very rapid Bartlett fruit growth, with the result that the second Bartlett picking (last picking) will give a larger tonnage than expected. However, present estimates give the cannery tonnage as 12,000 tons, and fresh fruit shipments as 3,000 tons. I still believe the total yield for the season will be greater than 15,000 tons.

"The recent hot period added further proof to our evidence that on heavy and on moderately heavy soil types the rate of fruit growth is reduced with greatly increased transpiring power of the air. That this reduction in fruit growth rate is related to insufficient root development was further shown by extreme reductions in fruit growth rate on root pruned trees, and less reduction on trees with mid-summer leaf removal.

FRUIT AND NUT PRODUCTION

Elmer, Snyder, Fresno, Calif.

Writing on July 30th of time spent by Mr. Harmon and himself in a study of bud variations in grapes, he says: "During our brief search in the Fresno area the following distinct variations were noted: A large-berried Panariti (Zante currant) having seeds; a large round Sultanina without seeds; a large oblong Sultanina without seeds; and a small round Sultanina without seeds.

"One Panariti vine on the U. S. Experiment Vineyard at Fresno was noted this spring to be bearing two large clusters of large seeded fruit. The rest of the same vine produced normally the small seedless berries. Since this indication was noted three vines have been found in commercial vineyards producing 100 per cent the large seeded fruit, and one of these vines has been producing seeded fruit consistently for 5 years. Numerous cases have been found where one cane or spur of a Panariti vine produced the large seeded fruit while the rest of the vine produced the normal fruit. In this case the seeded berries, although large, are a detriment as small seedless berries are desired to produce the 'Zante Currents' of commerce. However, it is very important to know if the seeded condition is a hereditary factor so that it may be guarded against in the selection of propagating material:

"In the case of Sultanina (Thompson Seedless) several variations were noted. The variations have fallen within three groups: A large round berry, a large oblong berry, and a small round berry. A brief summary of the findings in the limited time spent are: Five Sultanina vines with arms or canes bearing from 1 to 5 clusters of round seedless berries, while the rest of the vine produced the normal Sultanina fruit; 10 Sultanina vines producing on the whole vine the large round berried fruit--in fact it seemed to be the usual thing to find one or more vines on most every ranch having a Sultanina vineyard; and some remarkable variations of Sultanina with large oblong berries.

"Apparently nature does not act in one direction only. One Sultanina vine was found with one arm bearing blusters all the way from 10 to 98 per cent small round berries, the rest of the vine producing uniform normal oval berries. Since this first discovery, 52 more vines have been found in Sultanina vineyards bearing small round berries except for a slight sprinkling of the normal oval shaped berries.....

"While the proof of the pudding is in the eating, the proof of a bud sport, Mr. A. D. Shamel says, is whether it will propagate true or not. We have therefore selected budwood from 40 of the most outstanding variations and are running the propagating test on them."

ADMINISTRATIVE NOTES

Automotive Equipment In future all bids for automotive equipment will include a paragraph to the effect that the trade-in allowance or independent cash offer on used automobiles quoted in the bid is to be based upon the automobiles and all equipment and accessories attached thereto or used in connection therewith at the time of inspection by the bidders being surrendered to the successful bidder in as good condition, normal wear and tear only excepted, as at the time of inspection and appraisal, excepting such equipment and accessories as may have been reserved in the specifications for retention by the Government.

In view of the above, it is important that equipment and accessories which are on automobiles at the time they are inspected by bidders be not removed therefrom after the inspection, but that they be turned in to the dealer when the car is delivered to him.

Electric Lamps We have been distributing separates of the General Supply Committee's schedules and wish to call particular attention to Class 17 and the fact that the purchase of incandescent electric lamps in the field must be made under this contract. It will be recalled that last fiscal year the field service of this Department was exempted from purchasing under contract in less than standard package quantities. In view of the present contract, however, it will be necessary for all field service purchases of incandescent electric lamps to be made under Class 17 of the General Schedule of Supplies.

It is perhaps unnecessary--but maybe desirable! --to call attention to the fact that all purchases of furniture or office fixtures, electric bulbs and other electric equipment, books, photographic equipment, typewriters and other machines, and all items of a personal nature **MUST** --yes that's the word!--be purchased through the Washington office.

In emergency cases only, electric bulbs may be purchased but in all such cases the purchase should be made from the nearest branch office of the contractor if possible. If this is not possible, then a strong explanatory statement must accompany your voucher, showing just why the bulbs could not be purchased from the contractor.

Special Delivery The Post Office sent back to one of our sections an official letter mailed under frank, pointing out that the special delivery stamp had been pasted over the words "Penalty for Private Use to Avoid Payment of Postage, \$300," thus cancelling the franking privilege and making necessary regular postage! Paste this in your hat--not over the franking privilege.

ADMINISTRATIVE NOTES

Course in "At the request of Dr. A. F. Woods, Director of the Graduate
Photography School," says Mr. Ryerson in a Memorandum to Heads of Divisions, dated August 9th, "I wish to call your particular attention to the announcement of a special course in photography which will be given during the second semester of the Graduate School, beginning February 18, 1935, if a sufficient number make application. At least twenty will be required if the course is to be given. It is suggested that the course be called to the attention of members of your staff with the suggestion that those desiring to take the course get in touch direct with Doctor Woods. His office is Room 4090, South Building; telephone, Br. 317."

Doctor Woods explains that in 1933 a course on the Principles of Photograph was offered by Doctor Carroll of the Bureau of Standards, emphasizing the physical and chemical aspects of the subject. What is planned for February 18, 1935, is a course on the more practical aspects, presented by the best obtainable practical experts in each field, to include demonstrations of methods and equipment; photographic lenses and how to use them; cameras and accessories; photographic apparatus and materials; plates and films; photographic rendering of color values in monochrome; exposure; the camera in use, selection and arrangement of the subject; how to tell a story by photography; developing negatives; printing; photographing of buildings, structures and implements; Agronomical subjects; plants; flowers and vegetables; insects and small objects; livestock; photography with artificial light; interiors; pathological materials; color photography; line work and copying; photomicrography; infra-red photography; photographs for film strips and publication; filing. So far as time permits each student will have opportunity to confer with specialists on his or her photographic problems. Mr. C. H. Hanson of the Extension Service has agreed to take charge of the course assisted by specialists.

Department Prices for film strips issued by the United States Department
Film Strips of Agriculture are slightly higher for the fiscal year 1934-35, according to an announcement recently made by the Office of Cooperative Extension Work. Dewey & Dewey, Kenosha, Wis. again was awarded the contract for film-strip production because of the low bids submitted in competition with other firms. The prices for film strips until June 30, 1935, will range from 36 to 90 cents each, depending upon the number of illustrations in the series, the majority of the 200 series selling for from 36 to 45 cents each. Film strips are available on such subjects as farm crops, dairying, farm animals, farm forestry, plant and animal diseases and pests, farm economics, farm engineering, home economics, and adult and junior extension work. Lecture notes are provided with each film strip purchased. A list of available film strips and instructions on how to purchase them may be obtained by writing to the Office of Cooperative Extension Work, United States Department of Agriculture, Washington, D.C.

ADMINISTRATIVE NOTES

Accounting for Travel Advances The Bureau's Office of Accounts has notified us that effective from June 1, 1934, all disbursements for account of the Department of Agriculture, including cash advances for travel purposes, will be made by the Division of Disbursements of the Treasury Department. The new regulations (Gen. Regs. No. 59, Suppl. No. 2, Comptroller General of the United States, May 16, 1934) are, in brief:

1. Travelers to whom advances have been made are required to prepare and submit promptly their expense accounts (Form 1012) supported by Form 1039 (pink) through their administrative offices for audit, on completion of which claimants will be advised of the amount unexpended and due the United States.
2. Immediately thereafter the traveler is required to refund through the Office of Accounts, Bureau of Plant Industry, the unexpended balance of the Advance, for which he will be given a receipt. Checks issued to cover such balances should be drawn in the order of the "United States" rather than, as in the past, to the disbursing clerk of the Department.
3. Form 1039 (pink) should invariably be completed to show whether or not the traveler will continue to travel status and so have immediate further need for the advance. If not, as stated above, the unexpended balance must be refunded immediately.
4. If the amount of the traveler's claim is in excess of the amount of his Advance, a check for the excess will be drawn in his favor and mailed to him.
5. Every Request for Advance of Funds (Form 1038 or 1038a) must have typed thereon the name and address to which the check is to be mailed, inasmuch as no advances are made in cash. This information may be typed in the space to the left of the "Signature" of the traveler. Similarly, every reimbursement voucher (Form 1012) must contain information as to the address to which check is to be mailed.

These regulations should be carefully noted and followed to avoid delays and irritations in handling Advance of Funds papers. Incidentally, we want to emphasize again that we should have at least 7 days advance notice in connection with requests for Advance of Funds for travel expenses. With the new methods of handling this work it is not possible for us to secure funds with the same dispatch possible when we could take up the requests immediately with the Department's Disbursing Office.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER.

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI Washington, D. C., September 15, 1934 No. 18

Diseases of Ornamentals In a letter to Doctor Auchter concerning some recent observations on diseases of flowering bulbs and boxwood, Dr. Freeman Weiss comments on the fact that Southern wilt, a destructive disease caused by the omnivorous Schlerotium rolfsii, has broken out in some sections of the North with exceptional prevalence and virulence.

"It is noteworthy that the recent July exceeded the normal temperature for this month in the vicinity of New York, for example, by about 6° F.," he points out. This may have something to do with the exceptional prevalence of S. rolfsii there. It should be noted that the portion of Long Island where this supposedly southern fungus is particularly active had two periods last winter when the temperature dropped to 15° below 0° F. or lower, but on both occasions there was a heavy snow cover--once a good 30 inches!

"For several years the writer has observed the growing frequency with which S. rolfsii has been found attacking ornamental bulbs in Long Island--first German and bulbous iris and a few garden perennials, then tulips and lilies, and now narcissus bulbs. When any of these bulbs remain in the soil for a considerable time after flowering, the combination of waning plant vitality and rising soil temperature is likely to leave them a prey to S. rolfsii when it is anywhere around. Unless the bulbs are dug promptly and stored in a thoroughly dry place, their destruction by the fungus is soon complete.

DISEASES OF ORNAMENTALS

"Iris bulbs usually suffer worst, narcissus least, but on several Long Island bulb farms this year the narcissus bulbs have been appreciably damaged--sometimes merely by loss of superficial scales, sometimes by a root plate infection that has destroyed the bulb. The affected bulbs are of noticeably smaller size and poorer appearance even when the decay is checked by dry storage.

"In one instance a field which had not grown bulbs for 3 years showed a marked extension of S. rolfsii infestation over its condition when narcissi were last planted there. The fungus can attack almost any of the common weeds and also the crops used for soil improvement. This is fast becoming a problem of serious concern to Long Island bulb growers, especially to those who are experimenting with lily culture, since lilies ought to grow most of the summer, but they don't get to first base when S. rolfsii is around. The growers have adopted disinfection of narcissus planting stock as a standard practice (a treatment which kills bulb-borne S. rolfsii as well as other fungous enemies) but they have continued (despite warnings from us) to plant iris, tulips and lilies without treatment, even taking such stock from infested fields. Now they are going in for disinfection on a big scale, but much damage has already been done.

"Where S. rolfsii hasn't interfered, the narcissus and bulbous iris crops are the best ever, testifying to the benefits of a winter of heavy snowfall, and a cool spring.

"It requires a first-hand acquaintance with some real box plantings to appreciate this shrub (or tree!)," continues Doctor Weiss, with a sudden change of subject. "The miniature plants used as garden edgings in the humble villas which most of our kind possess, or the single undersized specimen which we provide as a rendezvous for the neighbors' dogs and cats, afford not the faintest conception of the impressiveness and virility of Buxus sempervirens when it is grown on some ancient Virginia estate, and has survived the vicissitudes of at least two wars and the passage of a hundred, sometimes two hundred years. But teak eventually succumbs to decay, and granite crumbles if you give it time. What wonder then that even boxwood finally exhibits malaise. But paradoxically, it is mostly the modern generation and not the veterans of yesteryear that are infirm. Perhaps the first hundred years of the life of a boxwood (and some aren't so very large at that age) are the hardest; if they survive infancy and adolescence, they may experience a vigorous old age! Nevertheless there are a lot of sick boxwoods in the country today; in fact, they have been nearly decimated, locally, from Massachusetts to South Carolina.

DISEASES OF ORNAMENTALS

"About one out of three of the specimens we receive for diagnosis is a boxwood. The drought of 1930, from which many a boxwood took the count, the warm dry winters of 1931 and 1932, the changeable winter of 1933, when a benign January coaxed many things, including box, into unseasonable growth, which February ruthlessly suppressed, all took their toll of boxwoods.

"When you consider that one average small boxwood costs as much as an acre of wheat will bring, and many boxwoods have been sold for amounts exceeding the annual cash income of the American farm family for a year, you can realize that insofar as the death of these plants is due to a preventable disease, it is a challenge no pathologist can ignore. And diseases are a factor, and an important factor, in the decline of boxwoods. Nearly every one we receive supports a fungous flora that would take one mycologist a week to classify. That is just the trouble; there are too many kinds of box fungi, or the more prevalent kinds appear too commonly, everywhere, to indicate that any of them are of indisputable primary significance.

"We think that for one solitary instance in their careers, the horticulturists are right, and that in the case of boxwoods ill health precedes the disease. About half the sick boxwoods in Virginia have been planted too deep and the roots have been smothered or starved, or they perish from thirst. Another half (a big one!) have suffered from neglect to control insect pests, of which the old box leaf miner and the leaf-cupping psyllid are now yielding in general damage to a spider mite and possibly a lantern fly. Another half--but well; any horticulturist can tell you that these plants need food, water, a modicum of winter protection, and occasional pruning.

"That a new and destructive box disease has appeared to afflict these century old and lovable items of our colonial horticultural heritage, this writer believes to be an error or a myth. But we do have lots of sick boxwoods to deal with--I emphasize that. And it is far more difficult to cure a sick plant than to keep a healthy one well. The entomological and pathological services of the Department of Agriculture have at least a minor triumph to their credit by reason of the superlative health of the box plantings of the Williamsburg, Va. Restoration Project, for the advice of these services was followed in the care of these plantings, and the Restoration boxwoods appear to be about the healthiest in America right now. But these plantings were started with consummate horticultural wisdom; even though in their first year they had to run the gamut of the drought of 1930.

"A far greater problem now looms (and will there be another triumph?). This is to devise means of restoring to health the many boxwoods that have suffered from horticultural mistakes and entomological neglect."

FRUIT AND NUT PRODUCTION

C. L. Smith, Austin, Tex.

"At Brownwood observations of stomatal behavior were made," he writes. "Even though no rain of account had fallen at Brownwood from May to early August, the stomates were functioning in late July in high percentages and for long periods during the day. This indicates relatively good moisture supply to the leaves. The top of soil, however, is very dry," he comments for the July 30-August 4th period.

For the August 6th to 11th period he writes in part: "Observations of the rosette experiments in Houk's grove at Bammel show good responses from spray treatments with zinc sulphate. Some trees that had the zinc sulphate applied to the soil are apparently improved. In the fertility experiment the higher applications of nitrate are showing up in larger and greener leaves on the trees. There are no nuts on the trees this season."

Commenting on activities from August 14th to 18th he says: "A trip to Brownwood was made and the young orchard and experimental work observed. The young trees are still in a very vigorous condition despite the fact that no appreciable rain has fallen since about the middle of May. The orchard is being disked to eliminate all weeds and Johnson grass. The stomatal behavior in the trees in the Lucas grove indicates good supply of moisture to the leaves. However, the surface soil is extremely dry and there is a heavy drop of nuts from the trees which may be correlated with the extreme dryness of the upper soil level.

"The spray experiments for rosette and also the trunk injections are showing very great improvement. Mr. Lucas sprayed all of his trees twice with zinc sulphate this season, and as a result the grove is in the best condition I have ever seen it. The improvement in the rosette condition is remarkable.

"A check of the rosette experiment at Bexar County farm, San Antonio, shows no response from any treatment except the trunk injections. Trees sprayed 4 times are in no better condition than checks. It is possible that the spray was not applied properly, and also possible that alkaline water was used in making the spray.

"A check of the drop of nuts during the past three weeks reveals relatively little damage by case-bearers. There was considerable drop due to other causes. Still no rain of account here at Austin, although we have had some showers."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

"During the past few weeks the codling moth situation has increased in severity and upon my return from Hood River, I learned that it was quite serious in the Wenatchee district," he writes under date of August 15th.

"It appears that regardless of the spray load on the fruit the worms seem to penetrate, some of them dying after getting into the fruit, while others appear to be perfectly healthy. In a few orchards the loss has even reached the high proportion of 75 percent of the fruit. This, however, is an extreme and does not represent the whole area. Nevertheless the situation is quite critical. Where control is fairly good, the washing problem stares the grower in the face."

J. L. Pelham, Robson, La.

Writing from the U. S. Pecan Field Station at Shreveport, La. on August 18th, he says: "Trees of the Hill Tract are showing the effect of the dry weather. The leaves are scorching and many are shedding. Some of the trees will probably die from the effects. The soil is so dry that it is powdery. Nut grass and other grasses are dead. On the main station the trees do not yet show evidence of injury from the dry weather, although the soil is dry for the first 18 inches and numerous cracks 12 to 18 inches deep occur on all parts of the place. Nut grass on this place is green, although bermuda has been dead for some time...."

B. G. Sitton, Shreveport, La.

"Soil sampled under trees irrigated and not irrigated in the Fullilove orchard," he reports for the week ending August 18th. "Where no water was applied the soil was dry for the first 24 inches, and no considerable moisture was present even as deep as 40 inches. However, a stiff clay layer occurs at this depth and this had considerable moisture.

"Where 5 inches of water was applied, the soil was wet to a depth of about 10 inches and below that it was as dry as the non-irrigated.

"Where 10 inches was applied, the soil was wet to about 25 inches deep. The clay layer at 40 inches seemed to be somewhat wetter than that under soil which had not been watered.

"An additional 10 inches of water was applied on the 17th to the same tree that had 10 inches on the 10th. Only a little more than half of this had penetrated the soil on the 18th."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Mr. Edwin Smith of Wenatchee spent three days with us, helping to formulate plans for pear storage work during the coming winter; and helped to make the first (early) Anjou picking from the time of irrigation plots," he writes under date of August 20th. "Mr. Henry Hartman and Mr. J. C. Moore were also here and worked with Mr. Smith in formulating the storage program.

"A great deal of time was spent during the past week studying the conditions under which drouth spot or cork of Anjous, and pitting of Bosc occurred. In the Anjou plots at the Dodge Orchard, unpruned trees with a very light crop showed no more drouth spot than heavily pruned trees. Summer pruned trees showed absolutely no drouth spot, whereas winter pruned trees showed from 40 to 80 percent drouth spot. This orchard is unfavorably located for obtaining irrigation water, and soil moisture in these plots decreased to approximately the wilting percentage before the single, mid-summer irrigation. Elsewhere in the Valley drouth spot on Anjou is not nearly as serious as it was in 1933. Pitting of Bosc is also less serious than in 1933; but is causing sufficient loss to be of considerable importance to many growers. I examined seven Bosc blocks showing this serious pitting of the fruit, and in each case the trouble was readily explainable on a basis of insufficient soil moisture. In most cases this Bosc condition occurred on trees suffering at some time during the year from high water table. Cases not explainable by high water table occurred on shallow soil which admittedly had received insufficient irrigation. Similar pitting to that on Bosc was found on Nelis and Anjou....I am making further detailed studies of pear root concentration. Upon re-excavation of holes dug in 1933, we found as much root growth (which had occurred during the past 14 months) as was found in the holes originally.

"Picking of Bosc and Anjou became well under way during the week. Although most of the fruit picked tested, with both the Oregon and the U.S. testers, within the 'optimum picking range,' the fruit in many cases looked and tasted green. It seemed that this season the fruit is softening while still in an apparently immature condition."

On August 14th he had written "Three afternoons were devoted to visiting pear growers with irrigation problems. In every orchard visited it was quite evident that many Anjou trees were suffering from insufficient soil moisture, in spite of the fact that, with medium to light crops, the fruits would attain marketable size. Many growers do not realize that such trees, if more vigorous, might be more profitable. In one orchard I found a situation typical of so many in the Rogue River Valley--trees on higher ground suffering from low soil moisture, and trees on lower ground suffering from high water table. Such a situation can only be corrected by a greater care in the irrigation operation than is now customary."

FRUIT AND NUT PRODUCTION

George F. Waldo, Corvallis, Ore.

"On Monday and part of Tuesday, Doctor Magness was with me looking over the work here in small fruit breeding at this station," he writes for the week of August 6-11, "and part of the time was spent in conference on plans for future work.

"The remainder of the week was occupied in making a record of some of the new plantings of strawberries and in transplanting and flattening up strawberry seedlings from crosses made during this past year."

A. D. Shamel, Riverside, Calif.

Writing on August 13th he reports: "In the Imperial Valley the recent heavy rains in Arizona have enabled the grapefruit growers to apply another badly needed irrigation. This will probably save the trees in most orchards but the crops are almost surely reduced in amount and of inferior commercial quality.

"The recent hot spell here resulted in serious burning in citrus orchards where sulfur dusting or oil sprays have been applied this summer. In other orchards the damage from sunburn has been light, only the exposed fruits having been burned. On the whole, I think that the total damage in this district is not more than 5 percent of the citrus crop.

"The walnut crop has been seriously damaged and in many of the orchards the leaves were badly burned."

Milo H. Wood, Sacramento, Calif.

"Considerable time has been taken up in obtaining preliminary notes regarding the several hundred acres of artificially pollinated orchards in the San Joaquin Valley," he writes August 11th. "All of the pollinated orchards seem to have put on bumper crops, and there is some speculation as to whether trees can bear so heavily and yet produce nuts of good size. Comparisons were made of the sizes of the nuts on some of the heaviest bearing pollinated Payne orchards at Linden, and on some of the lighter bearing orchards and there appeared to be no difference in the size of the nuts at the time.

"Preparation for the harvesting of the nuts in the almond breeding tract at Davis has been under way. While damage from bird infestations has been considerable, it appears that the hybrid trees bearing nuts will be numerous. Quite a number of new trees are coming into bearing this season and some are bearing crops earlier than expected."

FRUIT DISEASES

H. F. Bergman, East Wareham, Mass.

"Yesterday forenoon I examined a bog near Harwich which had been flooded August 16th and 17th for the control of fruit worms," he writes from the Cranberry Disease Field Laboratory on September 1.

"A 30-hour flooding killed most of the worms although a number of live fully active worms were found yesterday. There had been a small amount of water injury on young fruits. Rot is beginning to develop quite extensively on more mature fruits. Perhaps the amount of rot may have been increased by the flooding, but it is not possible to say definitely that it has, as there is a considerable amount of rot on many bogs now even though they have not been flooded during the summer.

"Hand picking of berries on new bogs is now in progress and a very few growers have scooped the berries on some small bogs. Harvesting will not really be under way until after Labor Day. The crop this year will be less than that of last, and has been estimated at about 385,000 barrels."

Paul W. Miller, Corvallis, Ore.

"Our first hot weather of the 1934 season occurred during the week just past," he writes on August 25th.

"At Corvallis, Ore. the thermometer recorded an official temperature of 96° F. on Wednesday, which was the hottest day of the week. The hot weather has hastened the filbert harvest and the nuts are now dropping in steadily increasing numbers. Some sunburn of walnuts has been noted from the effects of the heat wave, but it is not expected that any appreciable loss will occur, since the nuts on most varieties of walnuts grown in Oregon have passed through the stage of development when they are likely to be injured by high temperatures. In some walnut orchards in the Willamette Valley the heat has caused a premature dropping of the leaves. This is particularly true of those orchards which are located on soil with a low moisture content."

CANNED FRUITS AND VEGETABLES

\$100,000,000 Fruit Pack. Initial reports indicate that the canned fruit production of the Pacific West, representing about 76 percent of the national output, will reach a value of approximately \$100,000,000 in 1934, exceeding last year's values by 9 percent, the Bank of America, Pacific Coast branch banking system, announces, says our Daily Digest. Canned vegetables for the area may be expected to return an additional \$34,000,000, representing 12 percent increase over last year's totals. Pear growers this year are receiving \$35 to \$40 a ton as compared with \$15 to \$20 for the same grade of fruit last year.

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"I visited orchards in the Bentonville section on August 6th in connection with some apple leaf spot studies and found that the alleged leaf spots were a form of spray injury instead of being of fungus origin," he writes August 11th. This spray injury was absent in one non-sprayed orchard, but I was surprised to find the fruit in this orchard was completely ruined by the apple scab fungus. The condition of the fruit in sprayed orchards as compared with this non-sprayed orchard furnished an excellent example of the value of spraying. The damage to the foliage from the sprays was also of minor importance when compared to the extensive foliage injury resulting from infection by the apple scab fungus and leaf spotting organisms in the non-sprayed orchard. I failed to find the blotch fungus on the leaves or fruit even in the non-sprayed orchard. The peach orchard at Springdale which is being irrigated is still in excellent condition. The fruit is starting to show some color but from present appearances the crop will not be mature for another week or possibly a week and a half. The irrigation, according to the rough figures of the owner, has added approximately 3 acre inches of water in addition to approximately 2 inches received from scattered showers. Bacterial spot is very prevalent in this orchard and will prevent the grower from packing any appreciable quantity of fancy fruit, but even so he expects to receive from \$1.60 to \$1.75 a bushel for the fruit. The top price at Springdale so far this season has been \$1.50, and most of the fruit has been contracted for at prices between \$1.00 and \$1.50."

He wrote on August 4th: "The rain storm of July 27 (0.68 inches) supplied sufficient moisture to start growth cracking of the Stayman apples and drops which were examined on August 1 and 2 showed that cracked apples were present on every plot."

FALL AND WINTER GARDENS

There is still ample time in many sections to grow an abundance of green vegetables this fall, Mr. W. R. Beattie says in a Press Release sent out by the Department on September 10th. Since parts of the drought-stricken area have had good rains, crops of spinach, lettuce, turnips, mustard, kale and other greens may be planted wherever there is sufficient moisture in the soil, and the average frost date is late enough for these crops to reach reasonable maturity. In the Southern States many of the vegetables may be grown all winter, and Southern growers are in a position to keep the country supplied all winter with fresh snap beans, cabbage, carrots, beets, turnips, broccoli, kale, spinach, and other vegetables that will help to provide an adequate and balanced diet. In many families reduced income may hamper the buying of desirable quantities of fresh vegetables this winter. But those who are favorably situated can plant fall gardens, including such crops as are more or less frost resistant, and which will mature rapidly during the shortening days of September and October.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

"The ERA has taken further notice of our surplus crop saving plan," he comments in his memorandum of activities and observations for the July 29 to August 25th period, "and we were visited by Mrs. Dorothy Nyswander, director of women's activities in the 11 western states, accompanied by several WERA officials, who discussed freezing preservation and various pertinent matters with us. Mrs. Nyswander indicated that the plan was being brought directly to Mr. Hopkins' attention, and that it would find wider application in the West during the 1935 season.

"The packing season is about to come to an end with the putting up of Golden Bantam corn in the near future.

"A committee of the Wholesale Grocers' Association of the Northwest visited the Laboratory for the purpose of examining and discussing frozen pack fruits and vegetables....Dr. Dorsey of the University of Illinois visited the Laboratory and engaged with the writer in an interesting conversation regarding frozen pack development and technique.

"An additional bacteriological assistant was obtained from the WERA, Mr. Vernon McFarlane, graduate of the University of Washington.

"The WERA officials were kind enough to say in connection with this incident and during the visit to the Laboratory that they considered the Laboratory project one of their most important work projects, from the standpoint of the broad effect of our activities upon the economic life of the State, and upon the solution of agricultural relief problems. We were asked to express freely our needs for assistance, with the promise of a favorable hearing at all times. A suggestion was made that the printing or multigraphing of reports could be handled for us by the WERA, in the absence of funds or machinery for doing so in the Department."

He reports that the weather in the Puget Sound area has continued dry and warm, the precipitation deficiency since January being about 5 inches. This has had its effect on vegetation, of course, but has not seriously affected crops as yet. However, the forest fire situation appears to be rather serious, and several large fires and many small ones on the west side occupy attention.

"There have been continued meteorological suggestions of fall weather conditions, especially in the form of morning fogs beginning again about August 15, and in the coloring of deciduous vegetation."

GROWTH OF MICROORGANISMS AT AND BELOW 0° C.

Under this title, J. A. Berry and C. A. Magoon present in the July, 1934, issue of *Phytopathology* a survey which shows that freezing temperatures can by no means be relied upon to prevent the microbial spoilage of food products when the temperatures are at or even well below zero Centigrade. The organisms able to carry on at these low temperatures are widely distributed and of various kinds. No less than 15 different genera of fungi and more than 30 different species of bacteria, as well as yeasts and their close relatives, the torulae, have been found able to grow and function normally under low temperature conditions.

This discussion, of course, is not only one of general biological interest, but of decided practical importance in connection with the preservation, storage and handling of foods; and in particular because of the rapid development of the frozen pack industry. The authors record the results of studies on microorganisms derived from frozen-pack fruits and vegetables in our own laboratories, and bring together from the literature on the subject an amazing number of reported observations of other workers bearing directly on the subject. The literature cited contains no fewer than 56 items!

It is of particular value to know that the complete life cycle of some food-destroying fungi, from spore germination through the vegetative phases of growth to complete spore production, may take place at temperatures as low as -7.78° C., that spore production may take place at -9° C. and that vegetative growth and food deterioration induced thereby may proceed at a temperature of -10° C. or possibly even somewhat below that point.

The physical condition of the refrigerated material and the environmental factors seem to be more important than the degree of cold in determining whether or not growth will take place.

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

Writing on August 28th he reports: "During the past week I have made trips to orchard sections of this part of the State to collect from some peach thinning plots and to secure root growth and soil temperature data. In the root observation pits I found but little root extension taking place and here it was in pits where the soil has been irrigated frequently.

"The prune harvest in the Sacramento Valley came early this year. Some dehydrators had practically finished their work by August 20th. This was about the date the harvest started last year."

BULB INVESTIGATIONS

A large amount of development work has been accomplished at the Bellingham Bulb Station the past 12 months. Besides the regular investigational activities, about 20 acres of land has been cleared and put under the plow. Fifteen acres of this has been seeded and put down in meadow awaiting the time when it can be put in shape for bulb culture.

The clearing and seeding of land within a year is an almost unheard of thing in this region and it is not felt that this is permanently prepared. What will probably happen is that we will plow up 5 acres or so at a time for an oat crop and one of rye to turn under as soon as time permits us to catch up with some details, thus place the areas in thorough tilth, eradicate Canada thistle, kill the bracken, eliminate hardhack and persistent forest growth. Good meadow condition is then assured and the land will be ready for bulb crops as soon as additional tile is installed. Trunk lines of tile were put in as the tract was cleared--a total of about 3,500 feet having been installed within the year on this new clearing.

A 2- or 3-acre tract has been cleared of undergrowth and the less desirable of the trees such as alders, willow and birches, leaving the firs, cedars, maples, and a few of the best beeches and alders. Small rectangular tracts through this area are being placed in thorough tilth for experimental bulb plantings. About a fourth of an acre of this area was set to lilies this fall. The condition here will enable us to do many things not possible before. It will give conditioning for lilies requiring partial shade and enable us to experiment with shade-loving bulbs generally. Fortunately the area is a fine sandy loam for the most part. It has varied exposures and is perfectly drained. Water may be required for some items in July and August, but that can be brought in with about 1,000 feet of pipe from the regular station service, or a shorter distance from the Guide Meridian highway on the east side of the property by the installation of a separate meter.

Twelve thousand to 15,000 feet of one drainage tile has been re-laid at a uniform depth of 36". Sumps have also been provided at advantageous points to get rid quickly of surplus surface accumulations, thus reducing danger of erosion and insuring the protection of the bulb plantings.

The handling of the heavy loams in bulb crops is rather critical in this climate where the winters are wet. A surface slope of 100 feet even with a good grade is seldom safe without a line of tile cutting through it to prevent inundation of the lower areas on account of the retentive character of the soil. This has necessitated the installation of tile at intervals of not over 50 feet in all of the heavier bulb soils. The accomplishments of the past year will simplify the work on the station a great deal in the future.

ADMINISTRATIVE NOTES

Assignment of Salaries. Paragraph 35 of the Fiscal Regulations of the Department has been amended to read: "No assignment shall be made of department salaries payable by a disbursing officer of the Treasury Department. In such cases the purpose formerly served by assignment may be accomplished through power of attorney. A standard Treasury power of attorney form is available. Where salary is payable by a special disbursing officer of the department or by a fiscal agent, Forest Service, assignments of salaries may be made by employees when absent on account of illness, annual leave, or official business, except as hereinafter prohibited. When an employee desires to make an assignment of his pay under any of the circumstances enumerated above, he shall give to the special disbursing officer or fiscal agent a written order on a form provided for the purpose, showing the full name and address of the assignee, and the period covered by such assignment. Under no circumstances will any assignment or other order for salary be approved or honored by the special disbursing officer or a fiscal agent when in the nature of an assignment or other making over of salary for value received, or as security for a loan, or when made payable to loan brokers or companies, or agents thereof."

The change complies with a request of the chief disbursing officer of the Treasury, which stresses the delays caused by the assignments where, as in the Treasury disbursing system, the checks are made from stencils. Each assignment means a new stencil or the typing of the check. It is believed that the change will scarcely sacrifice convenience, since the power of attorney will practically serve every purpose of the assignment.

The standard "Power of Attorney" forms referred to may be secured from our Business Office. They may be filled out for a specific period during which it is desired to have some one receive your checks and cash them, or for a continuous period.

Employees headquartered in the field will deliver the form when executed to the person or bank who has been designated as their attorney. In all cases, where a power of attorney is given for any period or periods of time, the Business Office must be notified of the name and address of the Attorney, and also the period covered by the Power of Attorney, in order to avoid confusion in sending checks to the proper parties. The Attorney will attach the executed form to the first check he endorses. It will then go to the Treasury Department with the check, where it will be available for reference whenever checks are endorsed by the Attorney.

Employees headquartered in Washington will transmit the form to our Business Office, which will arrange to have it mailed to the Attorney with the first check drawn.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., October 1, 1934

No. 19

Kicking the Trap to Pieces. Once upon a time there was a little girl who prayed earnestly that the trap her brother had set would catch no birds. Then she went out into the yard and kicked the trap to pieces. That is really what A. D. Shamel and the man who stands beside him loading the guns, C. S. Pomeroy, have done in this citrus bud selection campaign of theirs.

The fact that citrus growers in the Southwestern States have eliminated literally hundreds of thousands of barren and off-type trees from their groves has not been due so much to the appeals made to the growers as to the fact that early in our investigations we tried to see that nurserymen offered no barren or off-type trees for sale. You get the idea? If the grower can get nothing but good planting stock, then good planting stock is all he will get. It is very simple! He can't get caught in the barren-and-off-type-tree trap, in other words, because we have kicked the trap to pieces.

Doctor Boswell and his legion of cooperators are doing some very effective trap kicking in connection with the vegetable standardization and description work. Already the general quality of seed offered to market gardeners and canners is distinctly better than it was only a few years ago. Seedsmen have been made to realize that there is no need to handle so many varieties and differently named strains of each vegetable; that they need not try to supply seed of 4 or 5 named varieties which are in fact almost identical. The result is that both dealers and growers are able to devote more care and attention to the seed crops of the important varieties and so are better able to improve the quality and purity of the comparatively few strains of each vegetable which are really of superior value.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

A charming young lady of Seattle leaned out of her window and called to a man reposing against a nearby fence: "Are you the fresh vegetable man?" The man turned and looked at her approvingly. "As to that, lady," he responded slowly, "all I need is a very little encouragement."

I am reminded of this, of course, by H. C. Diehl's report of August 26-September 8, which states that an informal cooperative cutting of raspberry varieties, seedlings and hybrids, prepared during the summer from fruit supplied by Mr. C. D. Schwartze, Horticulturist at the Puyallup Station, was held, and attended by a number of cannery and fresh shipping organization representatives. They may have been "fresh shipping organization representatives" to begin with, but the frozen-pack application probably chilled them in short order!

One cutting (of the raspberries, not the representatives) was held in the Laboratory at Seattle, and one at Puyallup, the amount of material to be examined being too great to be handled in one day.

"Very interesting results were obtained," writes H. C., "one of the most significant being the uniformity of excellent quality in frozen raspberry having Lloyd George blood. Cuthbert, Lloyd George and Viking of the named varieties were well received, as were Newman, Erskine and Cayuga. Since in most cases several pickings of each selection were on hand, it was possible to observe seasonal variation in these cases."

Another section of this report would appear to illustrate the application of frozen-pack methods to climate.

"Twice during the summer the maximum temperature exceeded 90," he writes; "possibly a dozen days had the eighty degree range, and for the rest, the usual cool, and this year exceptionally sunny weather, characteristic of this region, prevailed. Not until later did the forest fire situation in Western Washington become troublesome, and the recent rains have probably ended this annual menace for 1934 without excessive damage or loss of life."

"All the cranberry packs of the 1931, 1932, 1933 seasons were examined during the week, the purpose being the preparation of an article dealing with the freezing preservation of several varieties of cranberries grown in the Pacific Northwest."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The first period of real warm weather of the season occurred July 25th to 29th," he writes under date of September 13th, "with temperatures up to 100°. This was followed with a week of moderate temperatures, so that until the end of the first week in August almost ideal growing conditions prevailed for the development of the 1934 fruit crop in the Pacific Northwest. With a blossoming period three weeks earlier than normal, fruits generally had approached maturity at a correspondingly early date.

"The Bartlett pear harvest started as early as July 12th, though for experimental purposes we picked Bartletts July 26th. The Bartlett harvest was completed at the lower altitudes by the end of July. Experimental lots of Flemish Beauty were picked (on Wheeler Hill) July 26, Aug. 9 and 23; Bosc, Aug. 6th, 22nd and Sept. 5th; Anjou, Aug. 20th. The firmness of these varieties was in fairly low figures at the beginning of the harvest but did not decrease so markedly after the maturity of the fruit had reached the picking range. Nearly all fruits this year had a firmness less than ordinarily would be expected at the maturity indicated by the appearance of the flesh.

"The writer was in Medford for the first picking of Anjou pears from the Experiment Station plots on Aug. 16th and Dr. Gerhardt and Mr. Ryall were there for the second or commercial picking on Aug. 25th, driving back to Yakima on the night of Aug. 27th with collateral lots of pears for respiration and chemical analyses. In previous seasons these lots have been shipped by express and the transit time gave a storage performance which was not parallel to that of pears held at Medford. The third picking of Medford pears was made Sept. 5th by Messrs. Ryall, Reimer and Hartman who also took an active part in making the earlier pickings.

"The firmness of Jonathan apples was in the 15 or 16 pound range before the middle of August. By all the rules of Jonathan maturity the fruit was reaching picking maturity. However, the fruit mostly was destitute of color. With customary warm August weather after the first week there followed a period of high temperatures and low humidity, accompanying forest fires and a heavy smoke haze which kept the color of most apple varieties at a standstill between August 19th and September 7th.

"During this period growers were forced to make the first and, in many cases, the complete Jonathan picking because of fruit dropping. Very few Extra Fancy Jonathans were packed during this period and the appearance of the Fancy and "C" grades was decidedly below expectancy. Many orchardists applied their last cover-sprays at the end of July or in early August. By the first of September this coverage did not give protection against the third brood of worms. The cull bin received 20 percent or more of crops. In desperation, growers applied lead arsenate sprays during late August

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith (continued)

or early September, some with mineral oil. The American Fruit Growers applied lead arsenate with fish oil during this period and are now satisfactorily removing the residue with a sodium silicate solution.

"During this hot smoky period the Delicious were approaching picking maturity with their pea-green color daily changing to a jaundiced Mongolian sun-tan with only the faintest traces of pre-dawn pinkish stripes. This situation prevailed when we made our first Delicious picking at Rock Island Aug. 27th and also when the first commercial picking was made the following week.

"The hot smoky period ended Sept. 7th. Cooler weather with rain on Sept. 9th and a bright cool day Sept. 10th made one of the most marked fruit color transformations that has ever been experienced in the Pacific Northwest. There is now every indication that aside from sunburn the appearance of Delicious will approach that of a normal season because picking has only been started and the weather continues cool and cloudy. The Jonathan harvest is being wound up, red-sport Delicious are being picked and packed, and the Delicious harvest will now put the packing-houses in full-time operation. The Winesaps have excellent color for the season and only Stayman and Romes are in question. However, a few clear days should change their appearance, if their behavior corresponds to that of Delicious and Winesaps.

"Usual difficulty thus far has been experienced in cleaning pears and apples. However, this is always associated with poor equipment or late mineral oil sprays. Several growers have not been able to clean their fruit with the best double-process machines at maximum temperatures and concentrations. These have had to be run twice through a double process machine. Fortunately this season's Jonathans have withstood very high temperatures without cracking. Where mineral oils have not been used to excess nor late in the season, satisfactory cleaning has prevailed."

"The week of September 9th," he added, "has been ideal for giving apples a good finish and the advanced maturity of most varieties has resulted in rapid color changes seldom experienced in Northwest fruit growing. Jonathan and Delicious apples will go to market advanced in maturity and with an appearance forecasting early deterioration. Our tests with Delicious have shown that advanced maturity at harvest does not necessarily jeopardize satisfactory storage until March or April if the fruit is moved promptly into cold storage. However, this is not now fully taken advantage of in practice, though each year some advance is made in this direction. We shall step into the realm of extension work sufficiently to impress these facts upon the industry."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Some of the late ripening grape seedlings were checked during the past two weeks," he writes under date of September 15th. "While the breeding work with grapes has been directed primarily along the line of seedlessness, some additional crosses have been made to obtain better late grapes. The latest seedlings to ripen have been from crosses of Vigne de Zericho and Rodites. From this cross, Rodites being red and Vigne de Zericho white, one third of the seedlings were light red to red in color, while the remaining two thirds were white.

"More growers have visited the station this fall especially interested in stocks resistant to root-knot nematode. Special interest has been shown in our results with Solonis x Othello No. 1613 and our new test plot of Solonis x Othello No. 1613, Salt Creek, and Dog Ridge which has been established on nematode infested soil where several plantings of vinifera on their own roots have failed. A good healthy growth has been made by each of these stocks under nematode infested soil conditions. These test plots will be budded to commercial varieties and cared for in a commercial manner to ascertain the comparative value of the stocks under nematode infested soil conditions."

He had written for the August 1-31 period: "Approximately 500 grape seedlings, results of previous controlled crosses, were harvested and studied. Promising seedlings were noted for budding for further testing for commercial merit. While the vinifera grape breeding work has been a minor portion of the grape investigations and has been carried on along with many other major grape problems with limited personnel, some outstanding accomplishments have been made in the short period during which the grape breeding has been in progress. By using seedless grape varieties as male parents, seedless grape seedlings have been obtained in the first generation. With this method of procedure, a number of new seedless grapes have been produced. Several seedless grapes with muscat flavor have been produced, which have been desired for generations but have not been in actual existence until they were produced through the efforts of our vinifera grape breeding work. These promising seedlings have been budded on resistant stocks for a further test to determine their commercial possibilities. In addition to seedless grape seedlings, other seeded grapes have been produced which have promise of considerable commercial merit. Earliness has been promoted in seedlings by using early ripening varieties as parents. Valuable data on the transmission of color and flavor have been obtained. While it is too early to estimate profits for this line of work, one good seedless muscat flavored grape variety would be of inestimable value over a period of years. We have a seedless muscat grape which we are starting to test for commercial possibilities at this time.

FRUIT AND NUT PRODUCTION

Elmer Snyder (continued)

"Approximately 90 varieties were furnished for exhibit purposes at the State Fair, Sacramento, Calif., September 1-10. These varieties were all obtained at the Oakville station and are to be exhibited in a Napa county exhibit devoted entirely to grapes and wines, due credit being given by appropriate labeling to the grapes which were obtained from the Department's vineyard. The exhibit will be outstanding from the fact that over 40 of the grape varieties furnished by the Department's vineyard were American native grape varieties. This undoubtedly is the largest number of American native grape varieties exhibited in California at one time. Considerable interest has been noted in the growing of American native grape varieties in California, especially in the coast counties for use in blending with vinifera grapes in wine making operations. Our experiment vineyards have demonstrated that American native grape varieties can be grown to advantage in some of the Coast localities provided they are grafted on Phylloxera resistant stock roots."

B. G. Sitton, Shreveport, La.

Writing under date of September 15th, he reports that he checked on the rosette condition of pecan trees that were included in the experiment in which part of the trees were treated by placing dry zinc sulphate into holes bored in the trunks. The results were not very consistent, but many trees which received .50 or 1.00 mole zinc sulphate per square foot cross sectional area of the tree trunk were completely recovered from rosette and all trees receiving this amount were improved altho not free of rosette. Trees receiving less than .50 moles were in no case free of rosette and many showed no improvement. There were many cases where the cambium had been killed as much as 2 inches below the hole and some as much as 4 inches below. In the majority of cases of this injury, calus had grown from the sides of the injury so that the wound was almost covered or entirely so. Even though the treatment was the same on the basis of the cross sectional area of the tree trunk, smaller trees usually show more improvement than larger trees."

W. W. Aldrich, Medford, Ore.

"Anjou and Bosc picking is completed," he reports September 3d, "and Comice picking nearly so. From the taste of green Bosc and Anjou, these varieties should have very high eating quality this season. The Anjous this year have in many cases as much red blush as Comice usually show. The Comice have much less red color than usual. From casual observation I believe cool August nights together with low soil moisture contributed to the red color on Anjous, and the hot period of two weeks preceding the Comice harvest delayed its red color development....About 8 o'clock August 26, a half-hour windstorm swept the Valley. Fortunately most Anjou and Bosc crops had been picked. Comice pears and Yellow Newtown apples suffered an undetermined loss. At the Medford Experiment Station late maturity of the fruit and packing house delays postponed our harvest. In Block 4, containing 190 large Anjou trees, 380 boxes fell during the windstorm. Some contained codling moth, but most did not."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

Writing of a visit to our progeny canning peach planting at Merced, Calif. in order to study the performance of our early Phillips (151) he says that the trees produced heavy crops of fine fruit superior in several respects to the parent variety. "The manager of the Fancher Ranch told me that the California Packing Corporation had decided to propagate enough trees of this early Phillips strain to plant 100 acres of trees next winter. They have also decided to propagate the early Palora (163B) so as to provide enough trees for at least 100 acres of orchard planting next winter. These plantings, in addition to those made heretofore, will certainly give dependable records as to the commercial value of those peach strains under the conditions on the Fancher Ranch. There will also be plantings of each of these varieties made on the Wheatland Ranch in the Sutter Basin area but the amount of such plantings has not been decided at this time."

C. P. Harley, Wenatchee, Wash.

"Records were completed from Mr. Reeves' mildew plots last Saturday," he writes on September 10th. "In obtaining these records it was quite evident that lime sulphur sprays were by far the most effective in controlling powdery mildew in this heavily infected orchard. However, a large number of fruits showed mildew marking, even with three applications of liquid lime sulphur applied in the pink and in the calyx and one cover spray. The copper phosphate plots showed practically as many mildew marked effects as the checks under the conditions of this heavy infestation."

He had written August 31st: "The prospects of high colored fruit this year are not so good. The weather continues hot, with rather warm nights. The fruit apparently is following the blossoming date from the standpoint of maturing which was approximately 3 weeks early and at the present time the pressure tests are quite low, seeds are black and the fruit showing every indication of maturity with the exception of color. If these weather conditions continue there is every likelihood of considerable loss by failure to meet color requirements in grades."

George F. Waldo, Corvallis, Ore.

"We have planted between 4,000 and 5,000 seedlings this summer under irrigation and will have about 20,000 seedlings from this year's breeding work," he writes on August 25th. "These are being flatted now and are to be held in flats until early next spring when they will be put in the field. I recently made a trip to Olalli Lake to collect wild species of huckleberries, finding them in profusion in that locality."

FERMENTATION AND BACTERIOLOGICAL STUDIES

J. A. Berry, Seattle, Wash.

Writing of a visit to the Hershey plant at Snohomish, he says: "They were just finishing their pea pack. Mr. Hershey has an excellently appointed plant, with unusually good facilities for cooling the vegetables after scalding. One device is worth mentioning: This is a centrifugal machine adapted from an old potato peeler, into which about 5 pounds of peas are put from the cold bath following scalding. About 15 seconds whirling in this throws out half a pint of water which otherwise would not drain removable circular metal basket, the operation is very simple, and takes very little time.

"Mr. Nakada, one of our local frozen pea packers, is using a very effective method of getting dry pack peas in a loose condition - a type of pack some markets prefer. Mr. Nakada simply uses tough parchment bags for his peas, these bags being set in stout fibreboard cases for freezing. After a week's storage at -5° F. the bags are removed, and a few blows of a blunt mallet separate the peas quite effectively. They may then be returned to the cases, still in the parchment, or poured into tin containers, as the customer demands. The bags hold possibly 8 pounds of peas. Apart from obvious advantages, there is nothing amiss in this method from the sanitary viewpoint.

"Some blackberries and peas from the Gray's Harbour country still on the market (September 1) but harvest season is nearing its end. As far as weather is concerned, the season has been normal, and the yields, generally speaking, have been satisfactory. Pea growers have reported some trouble with aphids."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

"We recently received a visit from Mr. Ryerson," he writes under date of September 1. "Doctor Stevenson is here at present to assist in the harvesting of the experimental plots. A light frost occurred last night, the first of the season at Aroostook Farm. The early varieties of potatoes are mature in most of the fields in this vicinity. But very few have been dug, however, as the market is dull and the price low, recent quotations to growers being 75 cents per barrel.

According to a press report, 16,006 acres of seed potatoes have been certified in Maine this season. This is an increase of over 30 percent over the acreage certified last year."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"The latter part of the week was spent in survey work in Lewis county, Washington, Study particularly the bacterial blight disease of filberts," he reports for the week ending September 8th. "Outbreaks of bacterial blight were found in a number of filbert orchards visited on this trip. The disease was present in trees from 5 to 10 years of age as well as in younger trees. In the older trees, the disease had caused a death of buds and young twigs in the tops of the trees instead of a destruction of the tissues of the trunks as is more often the case in young trees from 1 to 4 years of age. In Lewis county, Wash. the disease seemed to be worse on the DuChilly variety than on the Barcelona or other varieties of filberts. It was further noted that bacterial blight was more prevalent on those trees which had been previously weakened from some adverse condition such as winter injury or drought. It would appear from observations made in this locality that trees weakened from winter injury or other unfavorable conditions are particularly susceptible to attacks by the bacterial blight pathogene.

"Bacterial blight was also found, during the course of this trip, on Corylus colurna (the Turkish filbert). Leaves, buds, and twigs of current growth of this species of Corylus were found infected with blight. In a few instances small cankers were present on one-year-old branches (of 1933 growth) at the base of blighted twigs of current growth. In most cases, though, the disease was confined to the current season's growth.

"The high degree of resistance apparently possessed by older branches of this species of Corylus was further shown by observations made near Silver Creek, Wash. in a Barcelona filbert orchard grafted on Turkish rootstocks. In this orchard there are several trees grafted on Turkish rootstocks which had died from girdling by filbert blight cankers on the lower part of the trunks of the trees. The blight cankers were located on the filbert trunks just above the union of the Turkish rootstocks and the filbert scions. The cankers were sharply delimited at the graft union, the Turkish rootstock being unaffected. It would seem from observations made in this planting that the use of Corylus colurna as a stock for the cultivated filbert may possibly serve to appreciably lessen tree losses due to bacterial blight. The use of this species as a rootstock for the cultivated filbert can not be unreservedly recommended, however, until it has been definitely proven to be perfectly compatible and suitable in all other respects.

"Approximately 7 percent of the filbert trees in a filbert (Brixnut variety) planting near Oregon City, Ore. have died from damages inflicted to the tissues of trunks by the unseasonably cold temperatures which occurred in December, 1932. Comparatively few of the low headed trees in this orchard, however, were injured during the winter of 1932. While the explanation for the lack of injury to these low headed filbert trees is not definitely known, it is suspected that heading the trees low may have assisted materially in the prevention of sunscald. Tissues which have been injured by the hot rays of the sun are believed to be more susceptible to winter injury."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore. (continued)

"Studies on leaf 'scorch' of filberts were carried on during the week," he writes for the period ending September 1. "This trouble is becoming increasingly prevalent in certain varieties. It is particularly severe on leaves of trees belonging to the Brixnut variety--one of the newer commercial filbert varieties. This disorder is characterized by the presence of large patches of dead tissue in the leaf which turn brown. The affected areas are located for the most part at or near the margins of the leaves, although in some instances the greater part of the lamina of the leaf may be affected. Microscopic examination of the tissues from affected leaves has failed thus far to reveal the presence of any micro-organism. Attempts to isolate a pathogene from typical spots were likewise negative. It would appear, therefore, from studies carried on to date that this is another non-parasitic or physiological disorder. While the exact non-parasitic factors responsible for the appearance of this trouble are not definitely known as yet, it is suspected that a deficiency of available soil moisture in conjunction with hot weather has been instrumental in causing this condition...."

"The filbert harvest is now at its peak. Many growers who are not bothered with rodent pests and blue-jays are allowing the nuts to dry on the ground, as the warm sunny weather is an effective drying agent, thereby eliminating one item in the cost of production."

M. A. Smith, Springfield, Mo.

Writing from the Ozark Fruit Disease Laboratory on September 1, he says: "Since our recent rains we have noticed that most of the apple varieties have resumed growth. Ben Davis and Winesap are making a particularly rapid growth but even with the most favorable growing conditions between now and October 1, much of the crop of late apples will be much below normal size at harvest."

"Strawberry growers in the Monett, Neosho and Seymour areas have lost thousands of plants this season. The strawberry association of Monett is making a careful survey of their area in order to obtain more accurate information of the extent of the damage."

"Grape harvest is well along in the Republic and Exeter sections. Since recent rains much cracking of fruit has resulted. One grower estimated that 35 percent of his crop will not be salable because of this trouble."

FRUIT DISEASES

G. A. Meckstroth, Chadbourne, N. C.

"There has been an unusual amount of dying of plants in the past summer, especially in young plantations set out last winter and spring," he writes for the week ending September 8th.

"A number of these fields have been plowed up. We are not prepared to definitely account for all this dying. In some cases, lack of moisture and high soil temperature no doubt are factors, but in others we do not believe these are responsible. One field in question had not been in strawberries since 1928, but was set out to strawberries last March; a portion of this field was fertilized before the plants were set out, but the rest of the field had not received any commercial fertilizer.

"The plants grew well until the end of June when they began dying. The margins of the older leaves turned brown and died, a type of injury which we have been considering typical fertilizer injury. Upon pulling up the plants the roots show serious injury, practically all the small feeder roots and the outer portion of the adventitious roots were dead. There was an unusually heavy infestation of root aphids; practically every living plant we pulled up was heavily infested. Doctor Lineberry, working on fertilizers, found that the soil was too acid for optimum growth of strawberry plants.

"Some of the roots showed definite lesions, but we have not been able to determine whether these are caused by root-rot fungi or aphids. I collected material for sectioning; I also collected soil from beneath dead and dying plants. I have sterilized a portion of this, and left some unsterilized, both lots to be planted with healthy plants to determine whether fungi are a factor in the killing of the roots.

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Laboratory on September 15th, he says: "The harvesting of the crop is proceeding rapidly in spite of a little trouble from 'strikers.'

"Nearly all of the early berries have now been picked and will be all harvested by the middle of next week if the weather remains favorable. The market for cranberries is very good, and big shipments are being made with a probability of higher prices on late berries.

"R. B. Wilcox of New Jersey, spent Thursday and Friday with us looking over some of our experimental work, and inspecting bogs."

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"The precipitation for August totaled 3.33 inches, a departure from normal of -.28 inches," he writes for the August 16-31 period. "All except .19 inch of the total precipitation for the month was recorded before August 15th. As the month closed many plants were beginning to show the effects of an insufficient supply of moisture. With little or no subsoil moisture to draw from, shallow-rooted plants apparently soon exhausted the supply of surface moisture from rains the first part of the month.

"All varieties of apples were greatly benefitted by the moderate temperatures which prevailed during the latter half of the month. Maximum temperatures of 90 degrees or above were recorded on only 3 days during this period. Jonathan, Turly and Starking are showing unusually good color. Starking is showing about 65 percent more color than delicious. The fruit is also sizing up much better than usual. Jonathan and Grimes will pack 2-1/2 inches and up instead of the usual 2-1/4 and up. The harvest of the Jonathan and Grimes will begin the first week in September. The fruit on Grimes trees injured by truck canker last season will be harvested a week or 10 days before the fruit on healthy trees will be ready to pick.

"The weak and broken limbs have been removed from the Purdue-Vincennes experimental peach orchard, and the ground disced both ways, running twice in each row with an extension orchard disc. The ground will be rediscd and seeded to Purkof wheat about the middle of September. In our experience the past two winters, this variety of wheat has given better results than rye when used as a winter cover crop to prevent erosion.

"The Concord grape crop in this section has been practically ruined by grape leaf folder and leaf-hopper. The foliage is so badly injured in many cases that the vines have the appearance of having had their leaves burned off by fire. Black rot caused very little damage this season, probably as a result of the continued dry weather last spring and early summer."

Talking Trees.---The professor was showing a young lady visitor through the station grounds.

"Ah," she exclaimed sentimentally, "what would this grand old oak say if it could talk!"

"It would say ' am an elm,'" replied the professor, gravely.

NUT TREES SUCCEED ONLY WHERE ADAPTED

There is a general notion that when the letter carrier takes a holiday, he goes for a walk! At any rate, the thing seems to work out that way very often. The editor of this great family paper happened to be in New York City on September 16th, the occasion of a double-header between the Giant and the Cardinals, and on his way back to Washington, reading the details of the affair in the New York Times (midnight edition), what should he see given about as much prominence as the baseball results, but a discussion by C. A. Reed on the adaptability of nut trees!

Pecan trees will grow all the way from southern Texas up the Mississippi Valley to northern Iowa, but if any ambitious Iowan thinks he would be wise to get seed or stock of Texas pecans to plant in Iowa, he will make a serious mistake, says Mr. Reed in a press release spread over the pages of several hundred papers by our Press Service. Words in time, fitly spoken, say we, and going to prove that our nut investigational work leans upon no frail Reed, so to speak.

Regardless of species, says Mr. Reed, plants are unlikely to be altogether hardy in any locality where minimum temperatures of Winter are much lower, or where the growing season is much shorter than at the place where the variety originated. A black walnut tree from seed that grew in Tennessee or Arkansas, for example, may grow into a fine-looking tree in Michigan or Minnesota, but the changes are that it will not regularly produce a good crop of nuts. For the planting of nut trees it pays to follow the same general idea that has proved its worth with most field crops. Grafted varieties are preferable, but if there cannot be afforded then get adapted seeds from the best trees in the locality, or, if it is necessary to obtain seed from a distant source, it should come from a place in the same general latitude as that where it is to be planted.

For generations trees have adapted themselves to the growing season and it is unwise to plant grafted varieties or seed from the South, for instance, in a location materially farther to the north.

Ourside In the handling of papers for presentation at meetings
Publication. or for publication in outside journals, it is important
that two copies be furnished, including the original. It
is an unnecessary burden on those who have to review these papers to
have only carbon copies to read. Always send the original and one carbon
copy. This will expedite the handling of the papers and make it unnecessary
to copy them here, or send them to the authors in the field for an extra
copy.

HORTICULTURAL FIELD STATION

A. C. Hildreth, Cheyenne, Wyo.

"The first killing frost of the season occurred the night of the 14th, a white frost on the ground the following morning," he writes under date of September 15th. "There was a drop in temperature from 65 at noon the 14th to 35 at 5 p.m. that afternoon; the mercury going down to 25 above during the night.

"The third cutting of alfalfa netted 11 tons of hay, the barn filled up and the balance stacked near the corral. The first car-load of coal was placed at Shellback siding the 14th. Furnace fires were started the 14th, but rising temperature the 15th will make them unnecessary for a while...

"Erosion Control FP 218: Another 1,000 pounds of Shepherdia argentea came in the fore part of the week from Doctor Maguire of Richfield, Utah. Two extra laborers were put to work cleaning this seed. Messrs. Engstrom and Newell collected wild plum and seed of blue spruce in the nearby mountains. Messrs. Hanson and Conard brought a load of plant material from Colorado the 12th, returning for further collecting in Estes Park region the balance of the week and proceeding to southwestern Colorado next week."

He had written on September 8th: "We continued harvesting summer squash, Swiss chard and some tomatoes and peppers, and wrote up descriptions of the varieties in the varietal tests. We also finished pruning hedges in the blacks under the overhead irrigation system, and completed the morning of surplus perennial plants from the nursery block, setting them out in the lawns. Specimen trees in the ornamental nursery were pruned preparatory to planting in permanent locations next year.

"Messrs. Babb and Kraus left on September 7th to inspect cooperative vegetable plantings in various parts of Wyoming; and Mr. Emmerson departed on the same date to look over cooperative shelterbelts in Wyoming and South Dakota."

ADMINISTRATIVE NOTES

Journal of Agricultural Research -- Reprints.

The receipt on September 20th of separates of a paper appearing in the May 15, 1934, issue of the Journal of Agricultural Research reminds us to call attention to the fact that these separates are not distributed along with the Journal. They usually come to us 6 weeks to 2 months after the actual date of publication of the Journal. According to the present practice, the Bureau receives 250 separates, of which about 50 are needed for the various file and reference sets. This means that if the paper is by a single author he may have as many as 200 separates if he has need for them. In the event that there are two or more authors, we divide the 200 separates among them.

DISEASES OF TRUCK CROPS

W. D. Moore, Charleston, S. C.

A recent letter from Dr. W. D. Moore from Charleston, S. C., his official headquarters, to Mr. Gould, contains such striking comments on the bean work in that section, that we are quoting portions of it without waiting to ask his permission!

"Until 1929," he writes, "our local growers bought bean seed principally from the East, giving little or no attention to what they were buying other than that the seed was a given variety. As a result of this practice, increased losses were sustained from year to year from such diseases as anthracnose, bacterial blight, and halo blight. During the season of 1928, there was more than a 50 percent loss on the bean crop for the entire trucking section of South Carolina. Many growers frankly admitted that they were through growing beans. Doctor Harter and I made an inspection trip through this area during the harvest period and made the first suggestion that western seed be used. I have followed this up from year to year since that time and have run numerous comparative tests with seed lots from various sections of the country. As a result I believe that almost 100 percent of the seed now used in this section comes from the West. Furthermore, I have not found enough of the three above named diseases during the past three years to even count.

"The latest available figures give South Carolina a total annual yield of snap beans of 315,280 bushels, with a net value of \$283,752. If we have been able to save half of this for our growers, our work has been worth more than \$140,000 for this State alone. How far this has spread to adjoining States I am not able to say, although I know that the same seed is used now in both Georgia and North Carolina as is used in this immediate section.

"With regard to wax varieties: It is merely a case of proving to the growers that there are more than 2 good varieties of beans for this section. Heretofore our local farmers have refused to attempt growing any wax variety in view of the fact that the pods always 'spot'. In my tests here during the last 3 years, I have found that with good seed and proper dusting for mildew any of the wax varieties may be grown. Furthermore, at least 3 of these varieties yield as well as any of the so-called standard varieties. With this information, together with the fact that our wax varieties consistently bring better market prices than the green pods, a large percentage of our local acreage is being planted to the Sure Crop Black Wax variety this fall. I am not able to roughly estimate what this will mean to this section during the present season, but in view of the fact that market prices on wax varieties over green pod varieties during our fall market season are about 40 percent higher, it is easy to see that this change will result in a material increase in net income.

"While the 'profit' figures may seem somewhat high, I have had so many farmers place them even higher that I felt free in accepting these as fairly accurate."

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October 1, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

HORTICULTURAL FIELD STATION

A. C. Hildreth, Cheyenne, Wyo.

"The first snow of the season started falling the night of the 19th, following a cold rain," he writes on September 22d. "Better than half inch of wet snow on the ground the 20th, all of which melted away by noon of that day. Such tender plants as zinnia, cosmos, coleas, marigold and salpoglossis succumbed to the frost of September 15th, but asters, calendulas, snapdragons, stocks, hardy chrysanthemums and annual larkspur continued to show good color after the low temperature of the 20th.

"Mushmelon and watermelon which were protected by cold frames against low temperatures were harvested for seed and the descriptions written up. Data was taken on fruit set of tomatoes. Harvested tomatoes for seed of F.P.I. and other foreign varieties. Cutting cauliflower September 21st.

"Prof. W. H. Alderman and family left for Minnesota the morning of the 17th after a few days visit at the station. Mr. Louis Williams, botanist, paid a short visit on the 19th, en route to the Missouri Botanical Gardens. Mr. Walter Presman, landscape architect of Denver, was shown over the station on the 19th; much interested in plants and shrubs suitable for landscape work in this region. Mr. A. Griffin, superintendent of maintenance, Canadian Pacific Railway, Brooks, Alta., Canada, was the guest of Dr. Hildreth the 21st and 22nd. He has furnished this station experimental lots of Alberta Brown, Lady Washington and other beans, as well as Gregory squash.

"EROSION CONTROL FP 218: Messrs Hanson and Conard are collecting in northern New Mexico; Maguire and Richards in Utah and Idaho; Engstrom and Newell in Wyoming; and Martin doing herbarium work in the laboratory. Messrs, Newell and Martin resigned at the termination of September 22nd, the former going to Lincoln, Nebr. where he will be part time instructor in agronomy at the University of Nebraska. Martin left for Boulder, Colo. to take post-graduate work at the University of Colorado."

"The second snow of the season fell the night of the 24th and the morning of the 25th, "he writes under date of September 29th," leaving about half an inch on the ground, which melted away by evening of the 25th. Some calendulas and asters still blooming. Lawn beds and borders being cleaned up and beds prepared for tulip plantings....The first date of planting experiment with shelterbelt trees was put in during the week and digging of 2-year-old ash begun, to be stored for distribution next spring to cooperators."

KIEFFER PEARS--AND PRESERVES

Heredity--or Environment? Under the title, "Factors Affecting the Quality of Preserves made from Kieffer Pears," H. H. Moon and C. W. Culpepper of our staff contribute to the Fruit Products Journal for September, 1934, a discussion which appears to prove that the Kieffer's reputation rests upon environment, not heredity. Properly handled, say these workers, the Kieffer will yield a preserve comparing very favorably with the high-hatted Bartlett.

"Kieffer pear preserves when properly made possess an attractive appearance and agreeable taste," they say. "The product is rather sweet, mild in flavor and mildly acid. No outstanding difficulty is encountered in its preparation. These tests indicate that an acceptable product may be obtained by using properly ripened fruit in the proportion of 50 to 60 percent fruit and 40 to 50 per cent sugar and by concentrating to a boiling point not to exceed 226°F. In these experiments the product in which 54.2 percent fruit had been used was considered best when all factors--color, consistency, texture and disintegration of fruit, flavor, and yield--were considered. The boiling time should be as short as possible, and stirring should be restricted to the minimum necessary to secure uniform boiling and prevent sticking. In commercial operations concentrating in vacuum would no doubt advantageous."

The Kieffer, of course, is grown widely in the Southern and Eastern states, where it yields large crops and is relatively blight resistant. It seems very desirable that a better utilization be made of the crop, and these studies should do a lot to wipe out the reputation the Kieffer pear has for low quality. Those who have tested the experimental lots are confident that considerable use could be made of the pears in the form of preserves especially by the housewife who has material that would otherwise perish--and provided, of course, that the fruit is handled properly.

It seems that the Kieffer must not be used for preserve making as soon as gathered, but should be stored for about two weeks at a temperature range between 60 and 65 degrees F. This is important--no higher; no lower. Merely storing for the two weeks is not enough; the temperature must be right and kept within this narrow range. It has already been shown by Lutz Culpepper, Moon and Myers that the Kieffer pear develops optimum quality for dessert or for canning when ripened at this temperature.

The best preserves of the lots made by Moon and Culpepper resulted with pears picked when well matured, stored for 16 days at a temperature of 60 to 65 degrees and then peeled and cored and mixed at a ratio of 11 pounds of the pears to 9 pounds of sugar. Only sufficient water was added to start the sugar to dissolving. The mixture was boiled until the syrup thickened to the point where it would boil at 226°F. This takes from 35 to 55 minutes. The preserve mixture is then canned and sealed while hot.

"Heavens, preserve us!" plead the Kieffers. "But by the right method. friends; by the correct method only."

FRUIT AND NUT PRODUCTION

Geo. P. Hoffmann, Meridian, Miss.

Writing from the U. S. Pecan Field Station on September 15th, he says: "Our tomato planting--20 selections planted in 1/100-acre plots and systematically replicated 5 times--continues to attract much attention and favorable comment. This planting was set to the field June 20th, and the first picking made August 17th, with pickings being made twice each week since and yields continuing to hold up. The selections show striking differences as to yield and quality."

On September 8th he reported: "Preparation was made for the turning of the summer cover crop of cow peas and crotalaria in the grove. This crop is less regular in growth than that of last summer, but is generally good and should return to the soil an average of 7 to 9 tons of green matter per acre. This crop will be followed with Austrian winter peas and vetch, as a winter cover crop, to be planted during early October.

"Growers generally regardless of the number of trees they have express themselves as having almost no crop of pecans. One grower, Dr. W. W. Reynolds of Meridian, harvested 3,500 pounds of nuts last year, but estimates this year's crop at 500 pounds or less....Pecan web worms are very bad at this time. Stink bug injury to nuts is noticeable. The mulching of the pecan trees in the station grove shows beneficial results and has greatly reduced cultural costs. Very satisfactory progress was made toward finishing the sweetpotato storage building. The heating system--hot water, with temperature control--promises to be very satisfactory....The quantity of locally-grown fruits and vegetables being offered is very limited--pears, crab apples, tomatoes, snap beans, new sweetpotatoes and greens."

"The sweetpotato variety and selection planting, consisting of 9 varieties and selections is unusually promising," he wrote earlier, commenting on the attention being attracted by the vegetable plot work, consisting of asparagus crown production, and sweetpotato and tomato variety studies. "The tomato variety and selection planting is yielding heavily and showing interesting differences. Pickings are being made twice each week. This planting is attracting considerable attention because of the high quality of 'fall grown' fruit--fall tomatoes not being generally grown in this section.

C. F. Kinman, Sacramento, Calif.

"At the request of a member of the State department of agriculture staff, I spend 2 days with him studying the possible relation of orchard culture practices to fig spoilage in the Merced district," he writes September 9th. "It is though that there is considerable difference in the percentage of fruits that are spoiled by the different diseases that affect figs between trees on different types of soil and between trees and orchards that are grown under different cultural treatments...The fig yield this year was fair and in many orchards the fruit is of high quality, but in some localities the loss caused by spoilage is very heavy...Up to date, September has been very dry and hot. This makes favorable conditions for fruit driers."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Oregon.

"During the past week a great majority of the Yellow Newtowns were picked and harvesting of Winter Nelis was begun, "he wrote on September 17th; and on the 24th reported that the harvesting of Winter Nelis was well under way.

"Color varies from a light green (No. 2) to a distinctly yellow (No. 3), "he said. "Some blocks of trees show extremes of both. In such cases the yellow and the green fruit is being packed separately, less buyers subsequently become alarmed at yellow colored fruits (indication of ripening) among green fruits.

"Russeting, particularly on the calyx half of Winter Nelis fruits is more severe than usual. General observations indicate this to be a result of rainy weather during the following full bloom. Sizes are medium to small.

"The work of determining root concentrations continued for 3 more days. However, the results suggested that New Frequent had 50 percent greater root concentration than Moderate or New Dry. Since 12 samplings per plot gave too large a probable error of an average to allow differences between averages to be statistically significant, from 5 to 8 more samplings are being made for both heavy and light pruning in all three plots. This will take two more weeks."

Milo M. Wood, Sacramento, Calif.

"Most of this time has been used in the harvesting of the almonds at Davis, and in identifying varieties, "he writes for the two-weeks' period ending September 8th. "During the 2 weeks a large number of almond varieties have been identified for growers and warehouses and interested parties. More odd varieties have been sent in for identification than has been the case for several years. Although many of the inferior varieties have been grafted over to better commercial sorts during the past few years, there appears to be at least 100 of the inferior varieties coming into the market. While the tonnage of the inferior varieties in proportion to the total production of almond is small, it still seems to be sufficient to be a marketing factor....

"At this date most of the almonds on the breeding tracts have been harvested and it appears at this time that if the hot weather continues all of the late ripening hybrid varieties will be harvested by September 25th."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

"We have just completed excavating the soil from trenches which we dug last fall in connection with our root pruning experiments on Winter Banana trees. Of the roots pruned November 22, 1933, we have found 56 percent showing root regeneration at the cut end; of those pruned April 2, 1934, 43 percent showed root regeneration at the cut end. This includes all pruned roots which showed any degree of new rootlets. The fall pruned roots, however, made a much better growth than those pruned in the spring. The fall pruned roots showed much better callus development and also less root rot. Of the fall pruned roots, 16 percent showed rotting at the ends, while the spring pruned roots showed 38 percent rot. In some of these roots the rot had advanced as far as two inches. We observed that the pruned roots near the surface of the ground showed better root development and less root rot than those down below it. Also, directly under the irrigation ditch the roots showed a great tendency toward root rot.

"We have photographed these roots to show the general contrast in the two plots and Mr. Reeves has made cultures of the organism causing the rot."

Writing on September 20th he said: "This has been a very interesting season to observe color development especially on Jonathan and Delicious. As stated in an earlier report, the harvesting date of Jonathan, as determined by the number of days from full bloom, came at a time when the days were extremely long and the nights relatively so, with a result that when the fruit reached harvest maturity as determined by the pressure test, color of seeds, etc., they had practically no red color at all. This was also somewhat true of Delicious, with the exception of the red bud sports.

"With the Jonathan, practically every grower in the Wenatchee district proper suffered considerable loss from knock-down in grades for lack of color. Those in the upper Wenatchee Valley, around Cashmere, Dryden and Leavenworth, fared somewhat better. With Delicious, the fruit took on a 'buckskin' or bronzy hue and where this occurred they appeared to take on very little color even after we had begun to have cool nights. Fruits that did not show this peculiar bronzing colored normally after the conditions were favorable. During the past two weeks the climatic conditions for fruit coloring have been almost ideal. With bright days and relatively cool nights, the Winesap and other late red varieties have taken on high color."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

"The potato crop is being harvested as rapidly as possible," he writes on September 29th. "A large yield is reported. Excellent weather conditions have prevailed up to the present time. No killing frosts have yet occurred. Prices remain low, the grower receiving only 50 cents per barrel for table stock. We have nearly finished digging the experimental plots. There still remains much to be done before closing up for the winter in putting up material for shipping, packing away the remainder of the seed stock in storage cellar, etc."

DISEASES OF TRUCK CROPS

W. D. Moore, Charleston, S. C.

"Excellent weather conditions have continued throughout this period for all truck crops of this section, with the possible exception of young cabbage," he says in his report for September 15-30. "Temperatures for the last 4 days have been somewhat higher than normal and young cabbage plants are wilting badly as a result. Only 1.36 inches of rain has been registered, although this has been fairly evenly distributed and few if any fields have shown a marked need for additional water. Fall cabbage has grown off rapidly during the past 10 days, most fields having already been thinned to an even stand and plowed. Some of the small crops, such as turnips, mustard, and squash are now being marketed locally. The bean crop is in excellent shape and some movement to market will begin within the next two weeks.

"Plant diseases in general have shown up to a marked degree during this period. Downy mildew has been found on both cucumbers and squash during the last week. One report has come in of powdery mildew on beans, this being the earliest that I have had since coming to this section. Sclerotium rolfsii is rather severe in some bean fields though not sufficient to warrant any drastic field measures such as crop rotation. A limited amount of mosaic has also been found on beans. The early ravages of Pythium on young cabbage plants have about ceased, due to the advanced growth of the plants and to the fairly dry surface layer of soil in the fields."

FRUIT AND NUT PRODUCTION.

Elmer Snyder, Fresno, Calif.

"After making a careful check on the fruiting data of the grape seedlings which we have obtained from controlled crosses, he reports September 30th, "we selected 20 of the most promising seedlings for further propagation and fruiting tests. These outstanding seedlings were bud-grafted on vigorous stock vines in 5 vine checks and in 2 years should be producing a considerable amount of fruit. Five of the better type of seedless seedlings were bud-grafted in 10 vine checks.

"A number of visitors have been at the station interested in our work and progress on stocks resistant to nematode injury. Several vineyards were visited where nematode injury had seriously affected the roots and with consequent cutting down of the crop production. One of our stocks, Solonis x Othello No. 1613, interplanted among Sultanina vines on their own roots in infested soil, was perfectly free from root injury. Another vineyard visited was infested with phylloxera as well as nematode. So far, however, we have been unable to find nematode injury and phylloxera on the same vine. While we think this is possible, nematode usually occurs on lighter soil types and phylloxera is more often found on the heavier soils."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The picking of Delicious, Richard, Starking and Golden Delicious for storage tests was continued during this period," he writes for the September 14-28th period, "making the last picking at Leavenworth September 27th. Dr. Gerhardt and Mr. Ezell have one more picking to be made for physiological studies...."

"While we secured very little injury in our studies of Jonathan apples under various temperatures and concentrations of washing solutions, we seem to have selected Delicious which were fairly susceptible to injury. The tests bring out the danger of washing Delicious in a flotation machine with hydrochloric acid and Vatsol at temperatures above 80°."

"The Delicious crop has been largely harvested, only the 'clean-up' or second pickings remaining. The harvesting of Winesaps started in earnest during this week and will probably reach a peak between now and October 10th. The heavy worm damage in Jonathan and Delicious crops promises to extend also to the Winesap crop. Previously thought to be out of danger of serious injury, many Winesap crops are found with recent entries of small codling moth larvae. Some crops are having 50 percent of the fruit thus injured. The difficulty in observing these recent worm entries by the graders and their subsequent glaring manifestation before inspectors is 'just one of those things,' evidently designed to bedevil those who are associated with the apple."

(Well, well, it begins to look as though Ed Smith is working around to a new angle on that Garden of Eden incident. Men for ages have been inclined to condemn the woman, but he is quite evidently prepared to put the blame on the apple!)

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"The drought which occupied so much space in previous reports is now a thing of the past, although the effects are still with us and the apple crop will be one of the most inferior harvested in this section for many years," he writes under date of September 22d.

"The Stayman apples have cracked very extensively and in most of the orchards the Jonathan variety is cracking, but not to the extent that the Staymans are affected. The cool weather of the past three weeks has stimulated color development and some Jonathans which I saw during the week had good color but were of poor quality due to small size and numerous cracks. In our experimental plots the Staymans are dropping badly and from 85 to 90 percent of the drops show extensive cracks. Some growers are reporting that as high as 40 percent of their older trees have been killed by the dry weather.

"I will look into this situation next week and will try to have definite information for the next report."

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"A total of 3.27 inches of rain fell at Vincennes during the first half of September," he writes on September 23d. "With the exception of a maximum of 90 degrees on the first day of the month, temperatures were much below normal for this period.

"The Grimes crop in the Purdue-Vincennes experimental orchard was harvested the week beginning September 9." The entire crop was sold tree-run in bulk for \$1.00 per bushel. The sprayed fruit showed neither disease or insect injury. Of the 10,284 fruits on the 12 recorded trees in the experimental plots, 9 were wormy. Last season the Grimes crop in this orchard was completely destroyed by apple scab, the infection occurring during the blossoming period.

"Stayman in this section commenced cracking shortly after the drought was broken early in July. By the middle of August about 30 percent of the Stayman crop was showing severe cracking. Practically no rain fell during the last half of August, the rainfall for the last 16 days of the month measuring only .19 inch. By the end of August practically no recent cracking was showing. Following frequent rains early in September, fresh growth-cracks developed on an additional 30 percent of the fruit. The fruit that developed growth-cracks in July or early August is a total loss. Fruits showing recent cracks is being sold for 75 cents per bushel."

Howard E. Parson, Spring Hill, Ala.

Writing from the U. S. Pecan Disease Field Laboratory on September 15th, he reports: "It has been usual for leaf scorch to have reached its maximum and for the affected trees to be defoliated by September 1 for the past three or four years.

"New leaves have then been put out before frost. Leaf scorch has not made its appearance to an appreciable extent here this fall. The reason is thought to be that there has been a more even distribution of rainfall this year. This indicates that the primary cause of leaf scorch is a limited water supply and that moisture may become so scarce as to cause injury without the combination of Bordeaux applications and drought. It also appears that potash deficiency is not the cause of pecan leaf scorch in this section. There was a dry period here the first half of September, but apparently not of long enough duration to bring on leaf scorch to any extent.

"Jays and woodpeckers have already started harvesting seedling pecans here. One cannot see from the ground that any hulls are opening."

ADMINISTRATIVE NOTES.

That reminds me--

THAT tips of all kinds are no longer reimbursible. The Economy Act, which granted per diem allowance in lieu of actual expenses for subsistence, contained a provision prohibiting such reimbursement.

THAT all vouchers covering the purchase of gasoline and oil should show the use to be made of same, whether for the operation of trucks, passenger-carrying cars, tractors, spraying machines, etc., or if for more than one of these, what proportion is used for each. This information is necessary to permit proper classification of the expense.

THAT all vouchers should show the number of the letter of authorization against which the expense should be charged. This will facilitate a closer agreement between our record of expenditures and yours and assist our Business Office in more rapidly handling the account.

THAT the Bureau Auditing Office has recently pointed out that where travel is performed in personally-owned automobiles the extra time required over that of rail schedules is charged for as leave at the beginning of the trip when the employee is traveling away from his headquarters and at the end of the trip when returning to his headquarters. For instance, where an employee leaves his headquarters for a trip which requires four days by automobile and two days by train, the first two days of his journey are counted as leave. On the return trip the last two days are charged as leave, the official time being allowed for the first two days.

THAT while the Bureau Auditing Office in their suspension letters designate as leave the extra time required in traveling by personally-owned automobile, regardless of whether this period covers Saturday afternoons or Sundays, the Bureau Leave Clerk charges as leave only the actual working hours during the period indicated by the Auditing Office. For instance, where the Bureau Auditing Office would indicate the leave to be from 11:45, Friday, September 14, to 8:00 a.m., Monday, September 17, the actual time charged against the leave records would be $4\frac{1}{4}$ hours for September 14 and 4 hours for September 15.

THAT in paying temporary field workers hired under letter of authorization in cash, care should be taken to deduct the 5% salary deduction in effect this year. The subvouchers covering such payments should clearly show first the gross amount earned, then the amount of the 5% deduction, and finally the net amount due the employee. This net amount is, of course, the amount to be entered in the reimbursement claim. In a few instances suspensions of such items have been made because of the absence of a showing that the 5% was deducted.

ADMINISTRATIVE NOTES

Reinstatements Personnel Circular No. 2 of September 22, 1934, states that in an opinion of August 25, 1934, the Attorney General held that the law requiring the apportionment of appointments in the departmental service among the various states and territories, on the basis of population, does not apply to the following classes of reinstatements:

1. Reinstatement of a person formerly in the apportioned service.
2. Reinstatement of a person who served in the field or non-apportioned service, but whose examination status was such that at some time during his employment he could have been certified to the apportioned service, either directly from the register from which appointed, or through transfer of eligibility to a register used for the apportioned service.

Under No. 1, cited above, a person once in the apportioned service may be reinstated back into the apportioned service regardless of whether or not the State to which previously charged is now over quota under the apportionment law, subject of course to the specific limitations of the rule for reinstatement.

RETURNING SUPPLIES TO DEALERS

Supplies or materials for which payment has been made to the dealer can not be returned to him as part payment on additional supplies without authorization from the Bureau.

Such property, under the regulations, should be disposed of only by a duly appointed Board of Survey, and the receipts are to be turned in to the Treasury to the credit of the "Miscellaneous Receipts" account. Such receipts will not be credited to your allotment.

Where, through misunderstanding, such property has been returned to the dealer and credit has been allowed on the dealer's voucher covering a subsequent purchase, it is necessary either to secure the return of the supplies or materials, or for the Department to have a check drawn on the funds of your allotment in favor of "Miscellaneous Receipts" for the amount of the credit allowed. As your allotment would thus be charged for the full amount of the purchase it will be seen there is nothing to be gained by returning supplies or materials already paid for and which, therefore, are the property of the Government, as part payment on subsequent purchases.

PREPARATION AND SUBMISSION OF MANUSCRIPTS

Manuscripts should be typed on the regular 8 x 10-1/2 inch sheets, writing on one side only, and leaving at least a 1-inch margin all around. An original is required for submittal to the Bureau's editor and one carbon copy for reference while the paper is in course of printing. All text matter, legends, footnotes, and literature citations should be typed double space. The footnotes are typed just below the reference to them in the text set off from the text by a line above and another below.^{1/}

^{1/} Footnotes are numbered with superior figures, as 5/. Text references to Literature Cited should be in italic figures inclosed in parentheses, as (20). In the list of literature citations itself, however, the figures should be inclosed in parentheses but not italicized.

End each page with a paragraph, because the material is distributed among several typesetters and is not easy to handle and collate if paragraphs are split at the bottom of the page. A paragraph too long for one page should be examined to see if it can be broken into shorter paragraphs without destroying the continuity of thought. If not, let it run over to the next page. Usually this can be avoided, and should be.

The table of contents (for printing) for all manuscripts except those intended for the Journal of Agricultural Research should contain all first and second headings, the latter indented four spaces. Departure from this rule may be made if there are very many headings, when only those of the first series need to be shown, or if there are only a few headings, then all may be shown. A second table of contents (for guidance of editors and not for printing) showing proper relationship of all headings should accompany the MS.

Legends for text figures should be typed in the manuscript itself immediately after the first reference to them, and set off by ruled lines such as are used with footnotes. Legends for plates should not be typed in the manuscript, but on separate sheets to accompany the plates. Illustrations should be numbered with Arabic numerals (plates and text figures separately) in order of mention in the text. When two or more illustrations are grouped in one plate or figure, the parts should be designated as A, B, C (not figure 1, 2, 3). Further subdivisions should be marked a, b, c (italic). Lettering on the face of illustrations should be done only tentively (in pencil) and the finished lettering left to the Department's Section of Illustrations. Do not paste on cut-out figures or letters. Photographs should be mounted on 8 x 10-1/2 sheets by inserting corners in slits cut in the paper, and not pasted or clipped to the sheets. The title of the manuscript and the figure or plate number should be written lightly in pencil (never typed) on the back of the photograph. The title of the manuscript should also be typed in the upper left-hand corner of the sheet on which the photograph is mounted, and the legend should be typed just below the photograph. A list of all legends (both figure and plate) should accompany every manuscript.

Literature citations should be inserted in the text as footnotes when there are fewer than seven. If there are seven or more they should be typed as a separate part of the manuscript at the end under the heading "Literature Cited."

Tables must be typed on separate sheets. Never cross-rule a table except to separate totals or averages from the rest of the data. Never use "do" in the first line under a center head, under a line of leaders, or in column consisting entirely of Yes or No. Always capitalize "Do" in the first and last columns but not in others. Use "do" in reading and date columns only. Footnotes to tables should be designated by superior figures, numbered across tables (not up and down) and should be typed on the same sheet with the table. Superior reference figures should be placed to the right of the text matter and to the left of the numbers except in the first column, when they should always be placed to the right.

Capitalization

Proper nouns and proper adjectives are capitalized, and common nouns and common adjectives are not; but the difficulty in applying this rule lies in the fact that some nouns and adjectives are construed as proper in certain connections and common in others. Johnson House (hotel) caps; but Johnson house (residence) lower-case; etc. Proper nouns and derivatives of proper names where used with a proper meaning are always capitalized. Capitalize Rome (Roman), Louis Pasteur, for example, but use lower-case for roman (type) or pasteurization. A common noun or common adjective forming an essential part of a proper name is capitalized - Massachusetts Avenue, Union Station, Cook County; but lower-case the avenue, the station, the county. A common noun used alone as a widely recognized short form of a specific proper noun is capitalized - the Capitol, the Monument (the Washington Monument at Washington), the Canal (Panama Canal), etc.

Capitalize plural forms of a common noun--Fourteenth and F Streets, State and War Departments. An epithet used with or for a proper noun is also capitalized - Keystone State, the Hub (Boston). Capitalize the full, the shortened, and the popular names of governmental bodies, and of organizations, institutions, and organized assemblages - League of Nations, the League; United States Congress, the Congress.

Capitalize all titles immediately preceding the names of persons. Thus, Chief of Bureau K. A. Ryerson; K. A. Ryerson, Chief, Bureau of Plant Industry; but K. A. Ryerson, chief of bureau (lower-case). Titles after signatures are capitalized. Capitalize principal words in titles of bulletins, books, plays, etc. and quote if introduced by the word "entitled." Capitalize scientific names of genera but not of species (Agropyron scribneri) geologic terms (Carboniferous), and trade names (Fon Asi). Names of horticultural varieties (Marglobe tomato, Elberta peach, etc.) are capitalized, but class terms (durum wheat, upland cotton) are lower-case. Use capitals for names of historic events, holidays, etc. - Battle of Bunker Hill, World War, Fourth of July, Feast of the Passover, etc.

Italic letters stand out prominently in a page of roman type and therefore are commonly used for words and phrases to be differentiated from the rest of the text. They should be used sparingly. The names of vessels and aircraft and the scientific names of species are italicized; also names of genera when followed by names of species; but phyla, classes, orders, families, tribes, and genera when standing alone are printed in roman.

Abbreviate States and Territories after city, town, county, military camp, national park, cape, island, mountain, river, etc. or any other geographic term when the name is given: Denver, Colo., Fort Riley, Kans.; Mono National Forest, Calif. For clock time, if immediately connected with figures, use a.m., p.m. and m. (lower-cased). For compass directions use E., W. (caps) for east and west, but in compound terms close up, as NE. and SW. (for northeast and southwest). Express temperature in figures and use degree mark (78° F.) Use "&" for and in firm names (Jones & Brown) but spell out in literary, artistic, scientific, and similar companionships - as, an article by Smith and Reynolds. Civil, military and naval titles should be spelled in full except when followed by initials of Christian name (Lieutenant Colonel Brown; but Lieut. Col. J. E. Brown. Abbreviate United States (U.S.) when used with name of department, etc., in footnotes, but spell out in text.

OUTSIDE PUBLICATION

We make rather extensive use of outside publications in getting our results promptly before those interested, but it must be remembered that such papers, radio talks, etc. treating in any way of the work or policies of the Bureau or Department must be approved before actually offered outside. There is no objection to a preliminary discussion with publishers. In fact, in asking for approval of outside publication we prefer to know the name of the publication to use the paper, whether pay for it is to be received, etc. In submitting paper for approval for outside publication two copies are needed and one should be the original (which will be returned to you with approval notice) to spare the reviewing officers the necessity of reading the sometimes pale and incomplete carbons! Failure to send original and good carbon may make it necessary to copy paper at Washington, or send to the author in the field for an extra copy with consequent delay.

DEPARTMENT PUBLICATIONS

And remember: Manuscript for Farmers' Bulletins should be short, and nontechnical, covering up-to-date information on some phase of our work; Circulars are a bit more technical; and Technical Bulletin, Journal of Agricultural Research papers usually are prepared essentially for the specialist, teacher, etc. Leaflets should be concise and popular in nature. We also have a Miscellaneous Publications series for things which do not come within the scope of the series mentioned.

THE PREPARATION AND EDITING OF LITERATURE LISTS AND BIBLIOGRAPHIES THAT
ACCOMPANY JOURNAL OF AGRICULTURAL RESEARCH PAPERS, TECHNICAL BULLE-
TINS, CIRCULARS, ETC.

1. Citations should be double space. This applies also to foot-
note citations.

2. Indentation and spacing. Citation numbers, enclosed in paren-
theses, should be at the left; 2 typewriter spaces; author's name (surname
first, followed by initials only). The second line of the reference: Date
first, indented 2 typewriter spaces under the author's name; 2 typewriter
spaces; the title of the article; 2 typewriter spaces; then if a book, the
main pagination, illustrations, if any, 2 typewriter spaces; place of pub-
lication; if periodical, the series number, if any, in parentheses, then
the volume number, the number of the particular issue if separately paged,
colon, 1 typewriter space, pagination, and illustrations, if any. The
title should be lower-case letters (to permit the Editor to indicate the
proper use of capital letters, etc.). Overruns should be indented 2 type-
writer spaces under the title.

Examples:

Book

(1) Arnold, S.

1929. wayside marketing. 123 pp., illus. New York.

Periodical

(12) Kirk, L. E.

1926. a comparison of sweet clover types with respect to coumarin
content, nutritive value, and leaf percentage. Jour. Amer.
Soc. Agron. 18: 385-392.

Bulletin

(24) Hooker, W. A., Bishopp, F. C., and Wood, H. P.

1912. the life history and bionomics of some north american ticks.
U. S. Dept. Agr. Ent. Bull. 106; 239 pp., illus.

3. Abbreviations for periodicals, bulletins, etc., follow Department
Bulletin 1350, Abbreviations Employed in Experiment Station Record for Periodi-
cals, with the following changes: Use Rept. instead of Rpt., for Report;
Bull. instead of Bul. for Bulletin; Mo. for Missouri; Pa. for Pennsylvania;
spell out Monthly.

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October 15, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D.C., November 1, 1934

No.21

There is a Connection. A man who had the habit of "window shopping," that is, of walking about the town looking at the displays in the various store windows, entered the shop of a pawnbroker and dealer in second-hand goods. "I don't want to buy anything," he admitted, frankly "I'm just wondering about your window display. There are half-a-dozen shops like yours in town and I notice that every one displays guns and musical instruments together in the show window. Just what is the connection between revolvers and musical instruments, if any?"

"There is a connection," explained the dealer. "You see, a man will look at the window display and come in and buy a saxophone, say. Well, in a week or so, a neighbor or some member of his family will come in and buy a revolver."

Most of the criticism directed at agricultural research is based on a failure to see any value in pure science, and in particular on a failure to see the connection between pure and applied science. They do not know that the history and development of scientific agriculture shows that the most important discoveries are usually made, not by the actual tillers of the soil, but by "scientists who plod in the seclusion of laboratories and pot-culture houses," as a writer in Current Science (Bangalore, India) recently put it. The average "practical" man would undoubtedly vote to eliminate an appropriation for work such as Mendel carried on with garden peas, entirely unaware of the fact that work of this type may very well have far-reaching importance in connection with the development of high efficiency in our crop plants. In fact, Mendel's work has been vitally important in developing more productive varieties of practically every plant that feeds and clothes us.

"Compared to the amount spent on piffle," declares a writer in the American Mercury for October, "the money spent on research in this country is microscopical, and if this industrial age is going to get anywhere, it has to do it by searching, researching and searching again....All the easy and obvious problems have been solved, but our path of progress has just begun...The work the government bureaus do is usually sound, with a little lost motion and following of blind alleys as can be found in any research organization."

While we appreciate the value of pure science, most of our investigations fall in the domain of applied science--and we are constantly finding out that the easy and obvious problems have not been solved; at least not in a thoroughly satisfactory manner. Every now and then we put growers in the way of saving thousands of dollars merely by revamping an old method. Pentzer and Asbury did just that in working out an improved method of using sulphur dioxide in the preservation of grapes in transit and storage. Winston did it when he published his common sense way of using an antiseptic wash in connection with the control of stem-end rot of citrus by the use of borax. It is more than likely that these men were dabbling in pure science when they discovered these improved methods. The same is perhaps true of the idea which has resulted in a saving of \$15 a car to citrus growers of the Southwest over rates formerly charged in connection with citrus refrigeration. Cold air is blown through the cars until the temperature of the fruit is about 40° F. when the car is closed tightly until it has crossed the hot desert region, when the ventilators are opened to admit the cool outside air. No ice is used in the car at any time!

I suppose A. D. Shamel & Co. were wrapped up in pure science when they discovered the importance of a uniformly high atmospheric humidity in citrus storage rooms--and went on to invent a humidifier for the purpose of maintaining the optimum conditions of humidity. That was a good many years ago and this improvement in the handling of citrus fruits is now generally used in California citrus packing and storage houses, and represents a contribution worth a million dollars a year to the industry, a value which is rapidly increasing through improvements and refinements in the methods of humidity control.

A good part of the researches in pure science may be of purely academic interest, as the writer in Current Science says, but a single more or less accidental finding with a new idea for its background may lead to the most far-reaching developments and thus make up a thousandfold for all the failures. There is a standard illustration of the money value of research--the tree. A standing tree is worth, say, \$10 a ton; when felled and stripped of its bark its value rises to \$15; through research and scientific treatment it becomes \$55 worth of paper pulp; and as a result of further laboratory study and additional treatment the pulp can be converted into a silk-like thread with a market value of \$5,500 a ton! Think of that, says the Florists Exchange, when you read or hear of some scientist working on a problem of plant culture that sounds far fetched and impracticable.

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"The 1934 spray experiment at Fayetteville was brought to an end during the week when the fruit from the count trees was harvested and examined," he writes on October 6th. "From the standpoint of disease control the 1934 experiment on the Stayman variety will yield no data as there was only a trace of apple scab on the non-sprayed trees. The results will show, however, very clearly the effects of the summer drought on the fruit crop both from the standpoint of excessive dropping of the fruit and the cracking which developed after the drought ended. The Stayman crop at the U. of A. farm was ruined from a commercial standpoint by the drought and much the same condition prevails in the commercial orchards, although I have seen several plantings of Staymans in which the cracked fruit was not quite as numerous as in our plots. The Stayman variety was the variety most severely affected by the drought throughout northwest Arkansas. The Jonathan crop shows some cracking and the fruit is small. The Red Delicious fruit I have seen has a good finish with practically no fruit cracked, but the apples are small.

"The total registration of college students at the University of Arkansas reached the figure of 1,587 on September 29, an increase of 154 over the corresponding date last year. All divisions show an increase ranging from 2 students in each of two divisions to 67 in the College of Arts and Sciences. The total increase is practically all men, 145, as compared to 9 women. All classes show an increase except the senior class where there is a slight loss (9), more than accounted for by the women, since the senior men show an increase of 12. The freshman increase is 81, including 74 men and 7 women."

He has written previously that he had obtained data from the owner of a peach orchard at Springdale, irrigated during the drought. "The orchard consists of 827 8-year-old trees, and approximately 3,000 bushels of Elberta peaches were harvested this season. One million gallons of water were applied during the drought periods at a cost of \$240. The fruit ripened one week later than the fruit in adjacent orchards, and was superior in size and color. The grower obtained from \$1.50 to \$1.85 per bushel for the fruit, while the price prevailing at Springdale was \$1.00 a bushel, with some fruit bringing as much as \$1.50."

"Gardens which were planted after the drought ended in August continue to yield produce and many of the farm people have been busy canning the late vegetable crop," he writes October 13th. "I spent some time during the week in the Springdale and Bentonville sections and the concensus of opinion is that the drought was not as destructive as thought. It caused a reduction in the apple crop, but prices are better this year. The major loss from drought was in the Stayman variety, which cracked badly.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"During the latter part of the week studies on the relation of spraying walnuts with Bordeaux mixture for the control of bacteriosis to the quality of the crop were carried on," he writes October 6th. "Results of these studies clearly show that the yield from properly sprayed orchards is much superior to that of untreated plantings, the percentage of blighted culls and misshapen nuts due to the presence of blight infections in the husk being appreciably reduced by proper spraying with Bordeaux mixture. For instance, in an unsprayed Franquette orchard near Aumsville, Ore. there were approximately six times as many culls due to blight stains and blighted parts of the husk adhering to the shell in the crop from the untreated portion of the planting as in that from the sprayed section. Similar results were obtained in studies carried on in sprayed Franquette orchards near Scholls and Eugene, Ore., respectively....The walnut harvest is now at its peak. Crop estimates have dropped somewhat from earlier predictions, so that now it does not seem likely that the crop will exceed 3,100 tons."

"During the week ending September 29th, we had our first touch of winter," he wrote September 29th. "Killing frosts were common over the entire Pacific Northwest. Cold rains during the forepart of the week turned to snow at higher elevations in the eastern part of the State. Snow so early in the season is an unusual phenomenon in Oregon. In 1916, it snowed on October 10, but snow in September is an unheard of occurrence except on the mountain peaks."

M. A. Smith, Springfield, Mo.

"Much cracking of fruits in the varieties Ben Davis, Jonathan, King David and Winesap has occurred during the past 3 weeks," he writes September 9th. "During this period we have had over 5 inches of rainfall. The demand for apples by truckers has not been very brisk as yet and a large number of growers are storing their fruit in anticipation of better prices in November and December....From reports, it is apparent that strawberry plants suffered severely from the summer drought. Extensive replanting will be necessary in most strawberry sections of southern Missouri."

J. R. Cole, Shreveport, La.

Writing from the U. S. Pecan Field Laboratory on October 13th, he reports that studies of the bunch disease revealed one new location in the Gillam district, a village about 30 miles north of Shreveport.

"The weather here remains hot and dry, with a maximum temperature of 89° on the 12th. No rain since last May, and we are really getting dry."

FRUIT DISEASES

J. R. Cole (continued)

"As I see it, there are two outstanding factors connection with this spray experiment," he writes on October 6th, speaking of a trip to the Combination Orchard at Winona, Tex. to examine Delmas plot sprayed with Bordeaux with practically no rainfall after the first of May. That indicates that we can use Bordeaux (weak solutions) with safety. It is even better to lose some of the nuts from scab than to injure the foliage with strong Bordeaux sprays. The second outstanding thing about this experiment is the comparison of the nuts on the irrigated and non-irrigated plots. The nuts on the irrigated plots are about twice the size of those on the non-irrigated plots. The nuts are also larger on those trees that have been thinned out."

Howard E. Parson, Spring Hill, Ala.

Writing under date of September 22d, he says: "Apparently there has been too long a dry period in September, with insufficient rainfall when it did come, to ward off leaf scorch longer. Unsprayed Stuart trees are shedding a large share of their leaves now, and Schley trees are showing signs of leaf scorch without many of their leaves falling. It may be that defoliation is coming late enough to avoid new leaves coming out this fall...Interesting results are appearing now on Stuart trees sprayed against leaf spots. Blotch is the most important in these plots. Trees sprayed with Bordeaux early are retaining leaves and have practically no blotch; sprayed with lime sulphur, retain leaves but have heavy blotch infection; Bordeaux late, losing leaves, very little blotch; and sprayed with zinc-lime, losing leaves, and heavy blotch infection. The foliage on all sprayed trees appears much greener and more vigorous than on the check trees. It is considered that aphids are not so much the cause of defoliation on these trees as lack of moisture."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl writes from Seattle on October 6th: "The export movement of fruit over this dock has been very light so far this season. Sailings of the Fruit Express Line were resumed with the arrival of the striking yacht-like refrigerated motorships, WASHINGTON EXPRESS and CALIFORNIA EXPRESS, but they were not well loaded on departure. The Royal Mail has had the DRECHTDYK in, but no great apple movement occurred."

"An informal talk was given before a luncheon meeting of the Knights of the Round Table. The 'knights' displayed encouraging gustatory enthusiasm over the samples displayed after the talk, the air being filled with such expletives as "legad, by the troll, and ods bodkins," while spoons played a stannous symphony on the dishes and lips smacked without etiquettish restraint, but appreciatively."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"An examination was made of Anjou and Bosc pears washed in August as a test for injury at various strengths of solutions and temperatures," he writes October 12th. "Both varieties this year withstood temperatures up to 120° in either hydrochloric acid or sodium silicate as well as Jonathan, and much better than Delicious apples. From 20 to 35 seconds at 120° seemed to have no injurious effect upon Bosc or Anjou at the time of removal from storage, excepting with Anjou specimens badly russeted which showed a slight shrivelling. The acid solution is the more desirable with Bosc as there is a marked darkening of the russeted surface of a Bosc washed in sodium silicate."

"Jonathans from the earlier washing tests have been examined for possible injury as they have come from storage for analysis. When washed with sodium silicate 90# per 100 gals. at 110° for 35 seconds some lots have shown minute cracks in the skin, usually termed 'heat cracks.' Similar lots were not cracked when washed in HCl 1.5% at the same temperature and exposure. Very little of the type of injury associated with fluorine-sprayed fruit in 1933 has been observed this year. The amount of injury, though given in our notes as a percentage of specimens examined, was not severe enough to be recognized as commercial injury on the most of these specimens."

"Dr. Gerhardt and Mr. Ezell made the last picking of Delicious apples on Wheeler Hill on October 9th. This, of course, was a post-season picking. Now follow their REAP (respirations, enzymes, acids, pectins; etc.) days. Their ripening of Bosc pears from three important districts of the Pacific Northwest has given some interesting contrasts in quality. Without mentioning district names, all judges are unanimous in giving first place for eating quality to Bosc pears coming from the orchard less favored with soil moisture."

"The weather has continued bright and warm during the day and unseasonably warm at night. The tendency of apples to drop has forced harvesting operations so that the trees at the lower elevations are now unburdened and much of the fruit sits in boxes piled in the orchards. Packing houses are overtaxed."

"The quality of this year's apple crop should have been high because the rate of maturity was faster than the picking crews, and a larger tonnage than usual was fully mature when harvested. But it is obvious that the quality of the crop as it reaches the consumer will be lower than normal because of exposure to high temperatures between tree and cold storage. In this respect the districts at higher elevations like the Tieton, Leavenworth and the Methow Valley have been harvesting with the normal maturity temperature and ripening handicaps of the lower districts such as Rock Island, Crescent Bar and Kennewick....The first wind of the harvesting season was experienced today. To growers who have delayed picking the loss will be heavy, but harvesting is so nearly completed that the total loss from windfalls will be exceptionally low."

FREEZING PRESERVATION

We have lately prepared mimeographed copies, for use with correspondence, of "A Physiological View of Freezing Preservation," by H. C. Diehl. The paper originally appeared in the June, 1932 issue of Industrial and Engineering Chemistry. We are now permitted to purchase reprints of our papers appearing in outside journals, but these must be secured through the Office of Information, and the number is limited--usually 100, maximum 200. Thus the mimeographed circular present a very useful way of getting extra copies provided the paper is not too long for use in this form.

Interest in the frozen pack industry keeps growing and it is a matter of gratification to feel that we are pioneers in this promising field, and have helped greatly in laying the foundation for this new industry, already becoming international in character. Our Seattle laboratory has played a leading part in establishing the Northwest frozen pack industry. Now several departments of the University of Washington place students at the laboratory, so that we are helping to send out young people with some knowledge of freezing preservation.

An outline of the important contributions of our workers to the studies of freezing preservation of fruits and vegetables would include such things as the discovery that satisfactory commercial preservation can be obtained by the use of ordinary cold storage temperatures without the installation of special low-temperature-producing equipment; that no danger to public health exists in properly handled frozen pack vegetables, so that the frozen packing of vegetables is safe as well as commercially feasible; the establishment of commercial packing and preservation technique for many types and varieties of fruits and vegetables; and the establishment of the facts of varietal adaptability of fruits and vegetables to freezing preservation, and the relation of fundamental science to the technology of this industry. In a way, it may be said without exaggeration, that the work of our investigators has largely established the sound, conservative technical foundation upon which the rapidly expanding industry will rest, and our workers in this field have exerted more than the usually expected influence upon the methods of planning of the industry.

Incidentally, H. C. Diehl and J. A. Berry have prepared frozen-pack sweet corn on the cob which marketed 6 months or a year later is actually fresher and sweeter than sweet corn bought at the market with husks still fresh! Freezing appears to stop most of the changes that normally take place so rapidly in sweet corn after it is gathered. The only way the city dweller could match this frozen-pack article would be to grow the corn in his own back yard, gather it, husk it, boil it and eat it within half an hour!

HORTICULTURAL FIELD STATION

A. C. Hildreth, Cheyenne, Wyo.

"The past week has been unusually favorable for outdoor work for this time of the year, being characterized by warm clear weather," he writes October 8th.

"Work has been continued on setting trellises for the grape vineyard, and we have started taking annual records on the fruit trees in the experimental orchards. The lawn and shrubbery borders were given the full irrigation, and tulip bulbs were set in the lawn and trial gardens, while the transplanting of perennials from seed beds to lawns was continued.

"Land was broken for additional shelter belts about the barn, root cellar and the western end of the building area. Manure was spread on approximately 2 acres of land in the nursery under the overhead irrigation system. Odd lots of tree and shrub seeds were planted in seed beds during the week, and replacements of shelterbelt trees made in the spacing blocks and mulching experiment. Replacements of dead and missing trees were made in all station windbreaks, and additional trees planted in the rabbit-repellant tree block.

"We gathered seed from Tracy Bean collection and from Foreign Plant Introduction varieties. Selected lettuce plants in the field were transferred to greenhouse for seed raising purposes. Balled selected plants of Chinese cabbage were taken into the greenhouse for breeding purposes this coming winter.

"We commenced cutting corn stover from fertilizer plots, and the taking of data on yield; and finished taking varietal description of turnips.

"Kelso and Babb made a trip to Greeley, Colo. Oct. 5 to purchase potato sorter.

"EROSION CONTROL, FP 218. - Agents Maguire and Richards resigned September 30. Maguire returned to the Botany staff of the Utah Agricultural College, Logan, Utah, and Richards resumed studies at the same institution. Agents Hanson and Conard returned from collecting trip in southwestern Colorado. Hanson left for Fargo, N.D. to resume duties as head of the North Dakota Agricultural College, and Mr. Conard is staying on at the station until expiration of appointment, mounting specimens and c ring for seed sent in. This terminates the work of collecting parties for this season. A five-man crew was maintained in cleaning seed sent in from the field, and in other erosion control duties during the week."

ORNAMENTALS

The Division's leading author of "best sellers," Furman Lloyd Mulford, whose Farmers' Bulletin 750, "Roses for the Home," has reached a circulation of some 1,500,000 copies, tells us that the Division is doing its part to keep pace with the increasing interest in football, by seeing that there is an adequate supply of chrysanthemums available for the games. If you happen to think that this work in chrysanthemums is merely incidental and largely a waste of public funds, you are quite mistaken. The Chrysanthemum, in spite of the fact that its season continues for two months or less, ranks among the first half-dozen flowers in commercial importance. Its sale would no doubt be greatly increased if the name could be abbreviated effectively. As it is now, thousands of men who start to write out an order for chrysanthemums find they can't spell the name and so have to switch to roses, say. And a man sufficiently--er--inebriated to wish to send his girl friend \$50 worth of Chrysanthemums usually finds he can't pronounce the name.

Mr. Mulford tells us that on October 8th there were in bloom at Arlington Farm 363 seedling chrysanthemums, the result of his development work seeking early flowering kinds for gardens in regions north and west of the District of Columbia. Of these, 55 were in bloom on September 5th and 183 on September 24 th.

Colors include all those familiar in fall chrysanthemums of both garden and greenhouse types. They range from single to very double, including pompon, peony and anemone types, with a few inclined to be slightly quilled. They range from almost 4 inches down, a majority being between two and three inches on unpruned plants, not especially fertilized. The plants have been selected for sturdy compact growth and healthy persistent foliage as well as early flowering, so that they are largely of compact self-supporting habit.

In order to determine their behavior under more trying conditions than those to which they are subjected on clay soil of Arlington Farm and a gravelly soil at Beltsville, Md., they are being tested at 10 experiment stations, from Wyoming and Oklahoma to New York. The object is to secure kinds that will flower sufficiently early in different sections of the country to give satisfactory bloom before freezes injure them and that are hardy enough to survive without excessive attention to winter protection. The care required must not be more than would be reasonable for an interested farm or village gardener to provide.

Much attention has been attracted to them at several of the experiment stations where they were planted last spring, as already reported by the cooperators in advance of the year's records of behavior.

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"In the central part of the Sacramento Valley, fruit buds of Bing cherry trees in all of a number of orchards that I visited are expanding and in rare cases blooms have opened," he writes on October 13th. "Most blossoms are on bent over branches that are fully exposed to the sun if not sunburned, and on such branches the average expansion of buds is somewhat greater than on thrifty upright branches, but from a trace up to one-eighth of an inch of new extension was noted on most of the buds that could be examined from the ground.

"In orchards that have been well watered all summer and the trees kept in thrifty condition, the activity of the buds appears to be as pronounced if not more so than in orchards that have been somewhat neglected. In orchards that were allowed to dry out badly during the summer, an occasional bud opened after late summer irrigation, but in these orchards the majority of the buds show but little new growth. In orchards where trees were kept in a thrifty condition all summer intermittent watering does not appear to be responsible for the bud performance. On shoots of these trees terminal buds formed about May 25th. It appears that the season has been just too long for the fruit buds. The summer has been warm, but we have not had the excessive maximum temperatures such as occurred during most summers. The cherry ripening season was early this year, and this may tie in with the present activity. Varieties other than Bing show but little of the bud expansion, if any."

C. E. Schuster, Corvallis, Ore.

"The packing houses were just getting into full swing on the walnut pack when they discovered that they were able to get a very small proportion of No. 1 nuts out of the walnut pack," he writes on October 13th. "There was such a high proportion of quarter-shrivelled and half-shrivelled meats that were so near the weight of a normal nut that they could not be taken out of the pack. In many cases they were sending the whole crop straight to the cracking room without making any attempt whatsoever to grade them. Other packing houses are figuring that they will not pack any No. 1 walnuts at all, but will put what few No. 1 walnuts they have in with the No. 2's. They claim that they could possibly get a few No. 1's by sucking out 75-85 percent of the whole crop. This checks very closely with the soil moisture studies that we have been making through the summer....No rain has fallen yet except light showers which have not even wet down at all, consequently we are making another series of soil moisture tests...A very serious condition is developing in some places among the filberts. The catkins on some varieties like the Daviana or DuChilly are falling off quite heavily. We saw some trees during the latter part of the week where 90 percent of the catkins could be shaken off with a very light shaking. How general this is, we do not know as yet, as it has just been reported and we saw the first material ourselves on Saturday."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"The citrus committee of the Riverside Chamber of Commerce proposes to celebrate on November 20, the planting of the first Marsh grapefruit tree here in about 1890 by J. E. Cutter of the pioneer citrus nursery firm of Twogood & Cotter. Mr. Cutter planted this tree in his home yard and it is still bearing fruit and in fairly good physical condition.

"The celebration will consist of two phases, (1) the unveiling of a suitable tablet at the site of the tree, and (2) a luncheon at the Mission Inn that will be followed by a discussion of the grapefruit outlook in the southwest. The facts are that the commercial grapefruit industry in the southwest started in the Riverside district, and the value of the Marsh variety was first demonstrated in this area....

"Last week," he continues, his letter being dated October 1, "we had an opportunity of seeing the results of some of the zinc-sulfate spray treatments for mottle-leaf in orange trees at the Citrus Experiment Station on the invitation of Director Batchelor. Most of the sprays used were made up with the formula 10-5-100, or 10 pounds of zinc sulfate (23 percent zinc), 5 pounds of lime and 100 gallons of water. This mixture was used with a little albumen spreader and at the rate of 10 gallons per tree. Most of the applications were made last February in the orchards of the citrus experiment station. There can be no question but that in most instances this treatment resulted in the elimination of the mottle-leaf condition in the sprayed trees in an otherwise rather badly mottle-leaf set of trees. In the unfertilized groups of trees the results were not so apparent; in fact, no differences were observed. The spray treatment of lemon trees apparently had little effect.

"In a few instances where zinc-sulfate was applied to the soil near the citrus tree trunks at the rate of about 25 pounds per tree there were decided evidences of injury to the trees. It seems apparent that a number of problems remain to be solved in this connection, including, period during which treatment remains effective, amount of zinc needed to improve the mottle-leaf condition, the effect on the trees of continued treatments, the time of year best adapted for the treatment of orange trees, and the use of zinc dusts instead of sprays either on the foliage or in connection with manures for soil applications. At the Limoneira ranch, the use of zinc-sulphate with manure in furrows near the drip of the trees has given marvelous results thus far.

"The present indications are that the Navel orange crop will be of somewhat earlier maturity than was the case last year....It still looks as though we had about the same amount of Navels in this district as we had last season, the crop in the State as a whole being from 10 to 15 percent heavier, largely due to the large increase of crop in Tulare County."

FRUIT AND NUT PRODUCTION

B. G. Sitton, Shreveport, La.

"While on leave Friday," he writes October 13th, "I visited the Rose Festival at Tyler, Tex. It is certainly a wonderful sight to see acres upon acres of roses in bloom. The Tyler nurserymen claim that fully one-third of the rose plants produced in the United States are grown at Tyler. I know that no finer plants are grown anywhere, and although no particular attention is given to blooms, they are certainly fine."

He had written earlier: "I attended the meeting of the National Pecan Association at Texarkana, September 25, 26 and 27. The meeting was rather poorly attended, but much interest was manifested. The program as a whole was probably equal to that of any recent year. Dr. Crane and Dr. Smith returned from the meeting by way of Shreveport, and we attempted to show them something of what we are doing here. There were also other visitors who came by here on their return from the meeting."

H. L. Crane, Albany, Ga.

"The pecan crop prospects in the old closely planted orchards in this district are so poor at this time that the growers are beginning to consider thinning the orchards," he writes September 15th. "Conferences were held during the week with several growers who had hopes that by thinning their orchards some of their difficulties would be overcome. Thinning pecan orchards presents quite a problem, due to the large size of the trees, the heavy root system, and the large tap root which is nearly always present. The stumps or roots of trees removed during the dormant season sprout badly for several years. Poisoning the trees has been used to some extent, with varying results. So far, no use has been found for the wood of these trees except as fuel, and it is not liked for that purpose because it makes so much ash. Many of the orchards consist almost entirely of varieties which have proved to be susceptible to diseases or are unprolific; hence if such orchards should be thinned, the trees left would be poor varieties and the growers would be little or no better off. Topworking these undesirable varieties is one way out, but with old and large trees, that is expensive and not always successful. Nevertheless, that is what is being done by some growers."

"Records of the set of nuts in the cooperative experiment in the G. H. Bacon Pecan Groves at DeWitt, have been secured. This is the first year since this experiment was started that there has been any appreciable set of nuts. This orchard at the time of the starting of the experiment in the spring of 1930 was one of the worst rosetted blocks of trees in the territory. Little progress was made in the control of rosette until the summer of 1932, when we began to use zinc. Since then the recovery of the trees from this disease has been remarkable, as the treated trees are now free of the disease, and have at this time from a fair to good crop of nuts on them."

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"Approximately one-half of the week was taken up with the harvesting of the almonds from the breeding plot, and in going over certain trees which are to be removed in the Student Orchard," he writes under date of October 6th. "Several crosses growing in the Student Orchard have this year produced some apparently outstanding nuts.

"Some time was devoted to the study of chestnuts in the Chico section, both regarding some rather unusual nuts produced by seeding trees, and in going over with Mr. Morrow and Mr. Schuster a number of specimens of the chestnuts from the Castanea mollissima block at the Plant Introduction Gardens. Some of these nuts appear to have good qualities and characteristics, and a complete record has been made of them.... One day was taken up at the meeting of the almond growers at Orland. An informal talk was given on the causes of lack of bearing of almonds in the district. The balance of the day was spent in conferences with growers regarding their various problems."

He had written on September 29th: "Most of the week was given to the study with Doctor Gravatt of chestnut varieties in nearby districts. The almond breeding investigations required attention at Davis. The balance of the time was used in the Chico, Orland, and Yuba City districts in going over the experimental pollinated walnut plots and in conferring with almond growers regarding rootstock problems, now coming to the front rather suddenly owing to the adverse seasons. The almond crop as a rule has been light in the sections visited."

Geo. P. Hoffman, Meridian, Miss.

Writing from the U. S. Pecan Field Station on September 22d, he says: "Our tomato plot yields are beginning to fall off, but the quality of the fruit is good. Aside from the valuable data obtained on the 20 selections in this planting, a far-reaching demonstration, observed by visiting farmers and local merchants, that high quality fall tomatoes can be produced in this section, has been of great value. At this time the demand is not so great for fresh tomatoes as it was two weeks ago because of Tennessee, Alabama and Kentucky tomatoes being trucked in."

Atherton C. Gossard, Spring Hill, Ala.

"When the experimental trees were sprayed for black spider on August 23 and 24," he writes September 29th, "it was thought that the spraying was done for the season. However, on my return from annual leave the aphid population was found to have increased so much that another spraying was necessary. All of the trees, those which had previously been sprayed with Bordeaux mixture, and those which had not, were attacked at this time."

FRUIT AND NUT PRODUCTION

J. L. Pelham, Shreveport, La.

Writing from the U. S. Pecan Field Station on September 29th, he says: "A portion of one row of Crotalaria spectabilis, about a rod long, was harvested and the green weight yield calculated on an acre basis. This particular part yielded at the rate of 18 tons green weight per acre. There are some other portions of the field on which the growth is greater that will probably weigh 20 tons to the acre, but the average for the whole planting will probably be in the neighborhood of 16 tons per acre. The portion harvested is being dried and nitrogen analysis will be made later. The plants are blooming profusely now, and many seed pods are forming, but there is some doubt as to whether they will mature seed.

George F. Waldo, Corvallis, Ore.

"A considerable number of strawberry crowns were examined from irrigated and non-irrigated Corvallis strawberries," he writes under date of September 29th. "There seemed to be quite clear evidence that fruit bud formation begins earlier and buds were more advanced from the unirrigated than from the irrigated plot. The irrigated plot, however, had differentiated fruit buds earlier in the summer and is now giving almost a full crop of fruit."

He had written on September 22d: "Indications are that buds are farther advanced generally than they were this time last year. This is probably due to the mild winter and early spring. If warm weather continues late into autumn, there is a possible danger of winter injury."

DISEASES OF TRUCK CROPS

W. D. Moore, Charleston, S. C.

"We have had a total precipitation of 3.90 inches in this area during the present period," he reports for October 1-13, "and a total of 5.77 inches since September 1. This is the heaviest rainfall that I have noted during the last 4 years over the same period. Unlike past seasons, however, this precipitation has been evenly distributed and has resulted in the finest local crops I have seen. After a slow start, the fall cabbage has developed at a rapid rate in all fields. Some damage is being felt from heavy infestations of insects, but an excellent crop is in prospect in spite of this. All bean fields indicate a full crop at this time. Small crops, such as turnips, mustard, and squash, are being marketed at present.

"As a result of the continued rains, an unusual outbreak of powdery mildew is showing up over this entire section. Most growers have dusted their fields and have the trouble under control. I noted one 40-acre field this week that has not been dusted and there is a 100 percent infection at this time. This field is considerably earlier than most, however. Some bean marketing is under way at present, although the northern markets are not favorable for this early date."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Monday and Tuesday were spent with 14 SERA men examining root distribution and root concentration for two normal Bartlett trees and for two adjacent Bartlett trees showing about 60 percent 'black-end' during the past 3 years," he writes October 8th. "Oddly, both root depth and root concentration was greater with the 'black-end' than with the 'normal' trees. This means either that tree and root distribution variability are too great to permit one trench per tree showing a representative condition, or that root concentration is not a contributing factor to "black-end" occurrence.

"The packout returns on the 1934 Anjou crop from the Station are now in, and can be compared with the production in 1932 and in 1933:

<u>Year</u>	<u>Field Lugs</u>	<u>Packed Boxes</u>	<u>Percent Packout</u>
1932	4,146	3,184	76
1933	4,100	3,001	73
1934	3,893	2,694	69

A complete packout of all fruit picked would be about 85 percent. The lower yield (in lugs) in 1934 than in 1933 is due to the heavy fruit drop in early April. The lower percent packout in 1934 than in 1932 and 1933 is due to more wormy fruits (young third brood codling moth) and more miss-hapen pears."

He had written October 1: "Some pear growers are viewing with alarm the unusual condition of fruit bud enlargement during September. In most pear blocks fruit buds have reached the size not ordinarily attained until February. In a few orchards, where an early September irrigation was applied, complete development of a heavy bloom occurred. The growers' questions are: Will these trees have sufficient bloom in the spring for a crop? Will the enlarged buds be easily injured by 5 to 10° F. this winter? At the Station, no trees came out into full bloom, but all Anjou buds are abnormally swollen. In two plots, which received an early September irrigation, the buds have enlarged until scales are loosened. The least bud enlargement is found in plots which have had little or no available soil moisture since harvest (in late August)."

POTATO INVESTIGATIONS

Severe Storm Writing from Presque Isle, Me. on October 13th, Dr. C. F. Clarks says: "We have just experienced one of the worst storms for this time of the year that has occurred since a similar storm in 1925.

About 6 inches of snow has fallen, accompanied by high winds. Much damage has been done to shade trees, also to telephone and electric light lines. The snow is a serious handicap to those who have not finished digging potatoes, as there are yet many acres to be dug. There is also some grain in the fields which has not been threshed."

LICKING THE STATION SOILS AT BELLINGHAM, WASH.

One of the big tasks Dr. David Griffiths has been tackling at the Bellingham Bulb Station has been the proper handling of heavy soils to acquire tilth and porosity through the crop season. There is a variety of soil on the place, but the sandy and gravelly loams are very limited. The greater part of the bulb areas when cleared of forest growth had only 8 to 12 inches of soil and forest debris over an almost impervious hard clay. Fortunately this subsoil breaks up on weathering but runs together again and bakes hard on drying. The surface soil takes water readily but does not let it pass quickly enough and it has to run off for the subsoil would not allow it to pass through.

Tile draining was resorted to early in the shaping up of the present location, but 2 feet was about as deep as the conduits could be laid because of the nature of the subsoil which sealed up quickly so that water could not get into the drains.

Subsoiling was resorted to as soon as possible and as soon as the necessary power was secured. The depth of culture with the "chisel" is now 20 inches and when handled properly water passes through fairly readily, for at each chiseling some of the more friable soil drops down furnishing waterways to the depth of the culture.

The station was really in considerable difficulty when the C.W.A. venture came along last winter. The use of the subsoiler began to interfere with the shallow tile and it became necessary to lower the conduits which could then be done, for the cultural operations had ameliorated conditions enough so that tile would function at a depth of 3 feet.

The C. W. A. project was therefore designed to accomplish the relaying of a large portion of the drainage system at a uniform depth of 36 inches to the top of the conduits. Eventually this will be a great blessing, but just at present it has worked considerable hardship because of the way it was necessary to perform the task. The organization of the venture was forced during the rainy season when the work was done on soaked ground. Tractors were run over most of the land in this wet condition. It will be readily realized what shape the soil was in in the spring. It will take 2 years to restore some of it to the fiability it was in before the relaying of tile began.

No one can realize the difficulties that have been encountered in getting the station lands into their present condition of tilth and friability. It has taken tile laid every 50 feet and sometimes every 25 feet; it has taken a phenomenal amount of incorporation of humus; it has required frequent 20 inch chiseling and plowing to a depth of 12 to 14 inches; but in the language of Dr. W. A. Taylor of a few years ago when he visited the station: "It is licked!"

ADMINISTRATIVE NOTES

Retirement A memorandum of October 8th from the Office of the Secretary announces that Paragraphs 526 to 567 inclusive of the administrative regulations of the Department under the caption "Retirement" are revoked.

This group of paragraphs consists for the most part of informative recitals of the provisions of the retirement law current at the time of the promulgation of the regulations--September 22, 1922, 42 Stat. 651--and of retirement procedure under the then current jurisdiction of the Commissioner of Pensions. All of this material has been rendered obsolete by wide retirement changes as a result of the amending act of July 3, 1926, 33 Stat. 904, and later amendments, together with transfer of retirement jurisdiction to other branches and modifications of accounting requirements in the matter of retirement deductions. Pending replacement of the revoked material by new paragraphs, if this is deemed desirable, employees desiring information on retirement matters should address themselves to our Business Office, which will take the necessary steps to secure the information desired.

Employment Under L/A In view of the continuation during the present fiscal year of the Economy Act's provisions prohibiting administrative promotions, salary vouchers covering a higher rate of pay to an employee than he was previously paid can not be passed for payment without an accompanying statement showing the present duties are different and of a higher grade than those of his previous employment. This statement must give the duties of his previous employment and his present duties so that it can be easily determined that the character of the latter employment necessitated pay at the higher rate.

This statement must accompany every such pay roll sent to the Business Office and is to be submitted in triplicate, two copies to be signed by the employee who certifies the pay roll. Our Business Office is not permitted to accept a general statement and to prepare a separate statement to accompany each voucher on the basis of this general statement. In other words, a separate statement must be forwarded by the field man with each voucher on which anyone is listed at a higher rate of pay. For the assistance of the field staff there follows a sample statement which will give a general idea of the form to be followed. This statement, of course, is to be modified to suit the individual circumstances of each case:

October 24, 1934.

STATEMENT REGARDING SERVICES OF H. G. BAINES, 8/5 to 8/12, 1933.

Prior to April 1, Mr. Baines performed services as an unskilled laborer, digging ditches at our Meridian, Mississippi, Field Station. During the period covered by the attached voucher he was employed driving a truck, upkeep of machinery, driving tractor, etc., which, while still of an unskilled nature, demanded a higher rate of pay.

Associate Horticulturist

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The report of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., November 15, 1934

No.22

We Hand Out Writing in the Citrus Industry (Florida) for September
A Lemon! 1934, David C. Barrow expresses the opinion that the Perrine lemon, originated in connection with the Division's citrus breeding work, will provide the basis for a lemon industry in Florida supplying the needs of the State and building up an export trade of considerable value.

"It is entirely within the realm of possibility," he writes, "that 5 years from now Florida may be producing more lemons than she consumes, and that 10 years hence, \$10,000,000 or more may be annually flowing into Florida from lemons shipped out after supplying our own needs."

Mr. Barrow speaks with a background of practical experience, for he secured budwood of the Perrine lemon from us and gave it a thorough test under commercial conditions. "The people of Florida are under lasting obligations to those Government experts whose thoughtful ingenuity and intelligent efforts created the Perrine lemon," he writes, "and they deserve all the credit. All the writer has done was to take their creation, discover its weaknesses and advantages, and to find and prove it fits into the picture." And Mr. Barrow has convinced himself that the Perrine does fit into the picture perfectly, and his article in the Citrus Industry is an effort to enlist other Florida growers in the campaign to increase lemon production in Florida promptly. He states that 300 acres have been planted to Perrine lemons in Florida within the past 18 months, and that lands are being cleared to more than double that acreage during the coming winter.

The Perrine resulted from a cross between the West Indian lime and the Genoa lemon. Because of its physical resemblance to the commercial lemon, and the fact that it serves every purpose of the lemon in ordinary use, it has seemed best to treat the hybrid as a new horticultural variety of the lemon. It has been named in honor of Dr. Henry Perrine, the horticultural pioneer of southern Florida, who in 1838 received from Congress a grant of land located on Biscayne Bay for colonization and tropical plant introduction. It is especially fitting that this new fruit should bear his name, as he is reputed to have introduced the lime from Yucatan on several of the lower East Coast Keys, where his planting of seed nearly a hundred years ago resulted in a number of so-called wild lime groves.

The tree is somewhat more hardy than the common lime, and appears slightly more hardy than the lemon. It is more or less everbearing, carrying fruit in usable condition 8 or 9 months of the year. Very surprisingly, the Perrine lemon has so far proved immune to the two worst diseases, respectively, of the lime and the lemon--lime withertip and citrus scab. This is doubtless due to the fact that the lemon parent is immune to lime withertip and the common lime immune to citrus scab--and the hybrid has inherited both immunities!

Mr. Barrow titled his article: "Damming a \$30,000,000 stream in Florida with Lemons and Limes." He says: "Ten years ago, Florida was consuming about \$1,800,000 worth of foreign grown lemons annually, practically all from Italy. Since \$1,800,000 is the annual interest at 6 percent on \$30,000,000, we may term it a '\$30,000,000 stream' of hard earned Florida money, flowing out at the rate of 6 percent per annum." He believes that the Perrine points the way to damming this stream.

On the basis of the former expenditure in Florida of \$1,800,000 annually for imported lemons, the prospects for supplying this home demand, and the further belief in the possibility of building up a valuable lemon export business, he writes: "In income this would mean transforming the original outgo of \$1,800,000 per annum into a new annual income of \$10,000,000, or an annual betterment of Florida's income by \$11,800,000.

"From the capital investment standpoint," he goes on, "it would mean a complete release from \$30,000,000 bondage to foreign lemon growers under which Florida has labored, and the transforming of that liability into an income-paying investment worth \$166,666,667, or a difference in Florida's favor of \$196,666,667--a result well worth striving to attain."

As is generally known, while Florida produces excellent oranges and grapefruit, the lemon has been unsuccessful there for various reasons, hence this enthusiastic reception of a lemon-like fruit which gives promise of succeeding under Florida conditions.

FRUIT AND VEGETABLE HANDLING TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Our bright days were interrupted with rain on October 15th," he writes in his memorandum of activities and observations for the October 12-26 period. "Since then we have had only four clear days, the balance being cloudy and cool with rain on five days or nights. The rainfall has been much heavier than normal for October. Many growers have finished packing operations though more apples were stacked in the orchards than should have been there, so we anticipate some trouble from arsenic burn.

"The cooler weather has been beneficial to the storage plants, though it immediately caused trouble for those still washing apples. Wax has not developed sufficiently to assist much with sodium silicate solutions but has interfered seriously with hydrochloric acid solutions. The addition of light mineral oils to acid and increasing the temperature to 110° have assisted some, especially those having brush machines. The use of part mineral oil and part kerosene has also been effective, though the kerosene has to be added continuously on account of its high volatility at the higher temperatures. Growers at Yakima are still postponing the washing and packing of apples which were sprayed all the season with cryolite, hoping that we can recommend an effective means of cleaning. Some of this fruit is becoming advanced in ripeness."

H. C. Diehl, Seattle, Wash.

"Intensive examination of the 1934 cherry packs was continued, particularly a series of refractometric readings on the residual sirups from hard frozen material as well as from thawed fruit, the objective being the shedding of some light on the problem of wrinkling in frozen pack cherries," he reports for the October 7-20th period.

"Waldo visited the Laboratory and participated in a cutting of canned and frozen strawberry, raspberry, blueberry and dewberry samples, to which he contributed canned material from Corvallis. A visit was made to the 100-acre strawberry plantings of B. D. Mukai on Vashon Island, where an interesting discussion regarding strawberry varieties, cultural practices and diseases was carried on by Waldo, Mr. Gaines of the State Department of Agriculture, and the writer.

"Several experimental packs of spinach were prepared, comparing steam and water blanching and different storage temperatures.

"A highly attractive pack of young Alderman peas and Chantenay carrots was prepared, various scalding treatments being used on the carrots in order to prepare them so that the requisite cooking period will render both vegetables equally palatable."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl (continued)

Writing on October 27th he says: "The usual climatic serenity of this region was violently disturbed by a storm of full gale to hurricane force, the center of which passed just to the north of the area on October 21. All through the day, furious gusty winds, with velocities as high as 70 miles an hour at Seattle and 85 miles an hour at Tacoma, caused loss of life and property damage totalling close to a million dollars. Little rain fell with the storm, however, which seemed confined to the lower air levels, because through the 'flying scud' type of cloud formation, glimpses of a clear blue sky could be obtained.

"During the storm, the lowest barometer recorded since the Laboratory was established was obtained--28.8 inches. Vegetation, especially shade trees, was rudely handled by the wind, one park in Seattle losing about half of its standing trees, some of them virgin timber.

"Following this intense storm area, came a prolonged rainfall (with snowfall in higher elevations), which brought a renewed threat of floods in the lowlands. For the second time in as many years accumulated meltage from the Nisqually Glacier on Mt. Rainier broke through a high natural rock dam and destroyed the highway bridge a quarter of a mile below the glacier snout, the second substantial concrete bridge having just been completed."

HORTICULTURAL FIELD STATION

A. C. Hildreth, Superintendent, writes on November 2, that the plowing of the tree nursery in preparation for seeding next spring has been completed, as has the irrigation of tree plantings. "We completed, too, sorting and grading trees in the storage cellar, and moved large ash and American elm from the ornamental nursery and heeled them in for storage under the overhead sprinkler system. Planted greenhouse bed with F-3 generation of breeding muskmelons; cleaned orchard seed; cleaned bean seed of Tracy and FPI varieties; and leveled land for extension of vegetable plantings. The alfalfa tract was irrigated and we completed taking records on the dryland orchard and of growth and reproduction in strawberry and raspberry blocks. Started taking records on the irrigation orchard. Mounded up with soil some of the fruit nursery stock which is left in the ground over winter."

Work on trellises for the grape vineyard was completed the middle of October, and fruit trees in tubs for breeding work stored in the cellar for the winter, while shelterbelt trees in the nursery were pulled, graded and stored in the nursery cellar. Sod was broken for the addition of 6 acres of dryland garden...."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"During the latter part of the week studies on the relation of spraying walnuts with bordeaux mixture for the control of bacteriosis to crop yields were carried on," he writes for the week ending Oct. 20. "Results of these studies clearly show that properly sprayed orchards bear a heavier crop of marketable nuts than do untreated ones. Thus, in studies carried on in a 16-year-old orchard near Aumsville, Ore., an increase in the field weight of 22 pounds per tree resulted from proper spraying with bordeaux mixture. In another instance, spraying with bordeaux mixture resulted in an increase of 9-1/2 pounds of nuts, based on dry weight, per tree. In view of these and past results there seems to be no doubt but that proper spraying with bordeaux mixture for the control of walnut blight does indeed result in a definite and appreciable increase in crop yield.

"Field studies on the possible factors associated with the abnormal dropping of filbert catkins were also carried on during the week. A survey of a varietal orchard at Corvallis, Ore. revealed the fact that some catkins are falling in practically all varieties of filberts. However, a greater percentage of catkins appears to be dropping on the DuChilly and Daviana varieties than on the Barcelona. This may prove to be a serious situation if the drop continues, since the DuChilly and Daviana are the chief pollenizers for the Barcelona. As the Barcelona is the most important commercial variety grown in Oregon, the importance of a plentiful supply of catkins on the pollenizing varieties becomes apparent. It was further noted in studies carried on that there seemed to be less of a drop on varieties grafted on Turkish roots. While the reason for this situation is not clear, it may be associated, in part at least, with the fact that the Turkish filbert typically has a long tap root and is therefore a very deep-rooted tree. If the dropping of the catkins is associated with the dessication of the roots due to the drought, as appears to be the case, a deeper rooted tree would not suffer as much as a relatively shallow-rooted one....The first real rain since the middle of June occurred on Saturday. In some localities approximately 1 inch of rain fell in 24 hours."

He had reported previously; "Certain grafted walnut orchards in the Willamette valley which from previous observations were known to have suffered injury from the unseasonably cold temperatures in December, 1932, were visited and further observations on the extent of injury made. Approximately 25 percent of the trees in a grafted Mayette and Franquette orchard near Liberty, Ore. have now died from damages inflicted at the collar by the 1932 freeze. It is estimated, furthermore, that about 10 percent of the trees which are now alive will in all likelihood succumb in the future. There are certain facts about the distribution of the dead and badly injured trees in this orchard which are worthy of note.

FRUIT DISEASES

Paul W. Miller (continued)

"In certain areas in this planting only an exceptional tree was still alive; in still other parts of the orchard only an exceptional tree was dead. In those areas where a large percentage of the trees had died, only the larger, more vigorous trees were still alive. The trees which had succumbed were, for the most part, small for their age, indicating that poor growth conditions have in all probability prevailed in past years. Borings made by the owner of this orchard with a soil auger indicate that the soil in those areas in which the trees have largely succumbed is, in general, relatively shallow.

"These observations point to the fact that poor soil conditions in combination perhaps with certain other ill defined factors, have predisposed these trees to winter injury. Another fact worthy of mention about the conditions prevailing in this orchard is its cropping record just prior to the freeze. In 1932, the trees in this planting bore an abnormally heavy crop. It seems reasonable to suppose that under the stress of maturing such a heavy crop the trees were weakened by a partial depletion of the food reserves normally present in the tissues. It may possibly be that a lack of a normal quota of food reserves would be an additional predisposing factor."

John C. Dunegan, Fayetteville, Ark.

"The inoculation experiments started October 16 with a yellow bacterial organism isolated from Black Tartarian cherry leaves and trunk cankers are giving positive results," he reports October 27th. "The organism is producing typical Bacterium pruni cankers on twigs of the peach. A culture supplied by Dr. C. M. Tucker of the Missouri Agricultural Experiment Station, also from the Black Tartarian cherry, is likewise giving positive results. The isolation of Bacterium pruni from this material does not solve the problem of the cankers on the trunks as we have not been able to isolate an organism consistently from these cankers, but it does strengthen the theory that the cankers may be due to pathogenic organisms."

He had written October 20th: "Ozark canning factories are operating full crews canning beans, apples, greens and other fall crops. Although regular season operations for the canners was cut by the drouth, prospects are that from 250,000 to 300,000 cases of beans will be canned if there is no frost before November 1. This estimate was made October 18th by George Sanders, president of the Ozark Canners Association, and manager of the Litteral Canning Company here. About 200,000 cases of apples will be canned he said...."

FRUIT DISEASES

H. F. Bergman, Amherst, Mass.

"Most of my time this week has been taken up in completing and recording notes of experimental work carried on during the summer," he writes from the Cranberry Disease Field Laboratory for the week ending October 27th. "Although none of our spray plots this year received more than two applications the results of examinations of berries made just after they were picked show a decrease in the amount of rot in sprayed plots as compared with those not sprayed. In some instances where plots were sprayed but once there is no apparent difference in berries from sprayed and unsprayed plots."

The report for the week ending October 20th said, in part: "The State Bog was under water for some three weeks after the middle of September. This prolonged flooding has increased the amount of rot on the Howes which are not yet harvested. Samples of berries will be taken later to determine the identity of the fungus or fungi causing the rot."

"A number of growers were still picking berries during the week but this week will finish the season. Many of the bogs have yielded below the amount estimated, while others have exceeded the estimate. The actual yield for the State will probably be much below the August estimates."

M. A. Smith, Springfield, Mo.

Writing from the Ozark Fruit Disease Laboratory on October 20th, he says: "A final summary of the experiment has not yet been completed, but from the figures at hand it is apparent that copper phosphate has again given excellent results in the control of apple scab...From records which were taken on the incidence of spray injury it was noted that the plots receiving the new copper fungicides throughout the fungicidal spray season showed the least amount of spray injury. Plots receiving sulphur containing sprays showed the most injury....Apple blotch was noticeably absent this season in the experimental plots. Bitter rot which seemed to have reestablished itself in 1932 and 1933 in several Ozark orchards was not seen in 1934 except in one orchard--where the damage was confined to 4 trees."

TRUCK CROP DISEASES

Dr. W. D. Moore writes from Charleston, S.C. October 31th that numerous fields of cabbage were ready for market and an appreciable movement was under way. "Likewise other green crops, such as collards, beets, turnips, and carrots are being marketed. Prices are none too favorable on this class of produce so far, but will probably improve as the weather gets cooler farther north. The major movement to date is by trucks."

BULB INVESTIGATIONS

The Gardeners' Chronicle (London) pays a nice compliment to one of our associates when it says editorially in the issue of October 13, 1934: "Dr. David Griffiths deserves the thanks of the horticultural world for the first sustained, large-scale effort to evolve a series of satisfactory garden Lilies of a particular type."

This comment is made in the course of a leading editorial review of Doctor Griffiths' paper on "Some Hybrid Martagon Lilies," published as U. S. Department of Agriculture Circular No. 299. The Gardeners' Chronicle, which in the same issue has a number of other notes based on Doctor Griffiths' bulb investigations, mentions that names have been given to 10 of these new lilies. As a matter of fact, the circular names and describes 11, and the names selected by Doctor Griffiths are almost as interesting as the lilies!

There is, for example, the Peter Puget, named after the lieutenant who served under the command of Captain Vancouver during the survey of the Northwest coast. The Frances Larrabee and Cyrus Gates get their names from those whose donations of land and facilities made possible the establishment of our Bellingham Bulb Station. Mercer Girl commemorates an interesting page in the early history of the Pacific Northwest. And the Vashon is named after the island on which the first lily-growers' association of this country (or any other country so far as known) was organized.

The Star of Oregon takes its name from the boat, STAR OF OREGON, which in the days of old Oregon went to California to bring cattle for the establishment of a live stock industry. Just to make the thing a little more difficult, another hybrid has been given the name Sacajawea. This is the name of the Shoshone Indian woman who so faithfully, efficiently and heroically piloted Meriwether Lewis and William Clark into and through the great Northwest Territory. Kulshan takes its name from the most conspicuous snowy peak in the Bellingham region (renamed Mount Baker by Captain Vancouver). The John McLaughlin is named in honor of the most outstanding and influential character in the early history of the Pacific Northwest--the chief factor of the Hudson Bay Company, who ruled so successfully from old Fort Vancouver for more than a quarter of a century. Another hybrid bears the name of Douglas Ingram, who lost his life in the Chelan forest fire in August, 1929; while No. 11 is the Shukan, taken from the name applied by both the aborigines and the white man to a beautiful snow-capped mountain 50 miles from Bellingham.

Because of its color plates and the resulting cost of publication, Circular 299 is available only from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is 20 cents a copy.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"We left Riverside early last Monday morning for Phoenix, Ariz. in order to study our grapefruit progenies on Col. Dale Bumstead's properties near Phoenix," he writes under date of October 22d. "Enroute we visited several orchards in the Coachella Valley that we have been studying for many years and one of which, the Whitney orchard, furnished the incentive for the extensive development of the grapefruit industry in the desert areas. Coachella Valley has a light crop this year, but the Whitney grove has a good crop of good quality.

"We also stopped at El Centro and with the Farm Adviser, Frank Beyschlag, visited several grapefruit orchards in Imperial County, in which we have been interested through the study of our strain of the Marsh grapefruit for a good many years. We expected to see very poor grapefruit tree conditions in the Imperial Valley owing to the restricted amount of irrigation water during the past summer but we actually found that the trees had a better appearance than they did a year ago. While the crops on the trees are lighter than usual, perhaps not half the normal crop, and the quality of the fruit is very poor, having very thick rinds and being deficient in juice, the vegetative growth and the green color of the foliage is remarkably good under the circumstances. It suggests that possibly some of the growers in that district were using too much irrigation water heretofore and that the lack of normal irrigation water supply has actually been beneficial so far as the tree growth is concerned.

"On Tuesday morning we stopped at Yuma and went over the orchards in which we are interested from a scientific point of view on the Yuma mesa, including the plantings on the Arizona Experiment Station at that place. As I wrote you last year after seeing the Yuma mesa grapefruit trees, the growth and development of these trees during the past two years has been amazing and almost unbelievable were it not true and confirmed through our systematic observations over a long period of years. The growers are learning how to irrigate and fertilize the trees on the mesa so that they are producing heavy crops of good fruit that is accompanied by a good physical condition of the trees.

"At Phoenix we were very glad to find that Colonel Bumstead's orchards are still improving and are outstanding both as regards the growth of the trees and a production of a very fine and uniformly good quality of fruit. Progeny propagations are most interesting to us and demonstrate clearly the importance of careful bud selection in the propagation of this strain of the Marsh grapefruit. As you know, Colonel Bumstead is keeping accurate individual tree records on more than ten thousand progeny Marsh grapefruit trees in his planting and these data will furnish the foundation for the preparation of a bulletin on Marsh grapefruit in the near future. These individual tree records have been kept from the beginning and are the most striking of any we have up to date.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif. (continued)

"We had the pleasure last Saturday of having Doctor Auchter and Doctor Gardner visit the progeny grapefruit plantings, and we feel that we were very fortunate in being at Phoenix when they arrived, so that we could visit the progeny orchards with them. While the production last year on these trees was amazing to us, there is an increase of at least 25 percent in this season's yields in the crop as a whole...

"Picking began in some orchards in all the desert areas about a week ago. This is earlier than usual. For example, last year Colonel Bumstead did not pick any grapefruit until the middle of January, while this year he picked some the second week in October. I don't know just the reason for this condition of earlier maturity this year as compared with some previous seasons, but we think that there was some relation to the higher average temperatures during the past summer than has been the case during the preceding years under our observations.

"One of the Mexican pickers found a pink Marsh, pink flesh and rind, borne by a small fruit spur in the Arizona orchard belonging to Colonel Bumstead. This picker had interest enough to call the foreman's attention to it before picking the fruit, so that the small twig has been marked and will be propagated experimentally this fall. There were five or six good buds on this small branch and it will be interesting to determine as to whether or not the characteristics of the fruit will be perpetuated through budding from the fruit spur directly back of the fruit."

Writing on October 29th, he says: "The rains of a week ago have improved the appearance of the citrus trees and owing to the continued warm weather very late growth is taking place.

"Whether this new growth this late in the season will harden up before cold weather sets in depends upon the climatic conditions for the next month. For example, I was in the Sunny Mountain orchard this morning for a couple of hours and found that the foliage on the orange trees looks better than I remember seeing it at this time of year during my entire experience here.

"However, the crop of this outstanding orchard in the Riverside district is rather light, and the fruits will be much larger than normal and somewhat coarse in texture, an unusual condition for this particular orchard. The fruits are of early maturity and I think would pass the standards of maturity at this time if it were desirable to pick the fruit now, which is not the case."

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"We completed the last series of moisture collections for the dry season this week," he writes on October 20th. "This morning it is raining quite heavily with indications of continued storms for some time. Through the valley almost no fall plowing has been done. The seeding that has taken place is generally on disked land, but even then the amount of land seeded to fall crops is unusually low....."The shedding of catkins on filbert trees noted in the last report is apparently quite widely spread. We have seen it in several other orchards. It is our impression, which may be changed later when the leaves are off, that the production of catkins is not very extensive in any case."

W. F. Ficht, Palo Alto, Calif.

Writing to Doctor Magness under date of October 22d, he reports: "I found on my last trip into the Linden district that the varieties grown under the names of Sutter Cling, Gaume and Homestead were not the varieties grown under those names up in Sutter County. During the rush a few years ago to increase the acreage of cling peaches, there was evidently considerable carelessness in cutting buds for the propagation of nursery stock, and if there is as much confusion in other localities as I found in the Linden district, this will lead in a few years to a very unfortunate situation. In one or two instances these varieties are perhaps superior to the originals, in others they are inferior and it is perhaps even probable that they should not be further propagated."

"In the later ripening pears in the experimental orchard, I found one, Michigan No. 253, a cross of Dana Hovey and Duchess, that was very good quality. The size was good and the shape satisfactory, the flesh juicy and sweet and of very good flavor. There was a little grit in the center but probably not more than in Bartlett and others of our commercial varieties. I have before called attention to the excellent flavor of the Seckel x Duchess hybrids. This suggests perhaps that the Duchess is a very good parent."

George F. Waldo, Corvallis, Ore.

Reporting on a trip into Washington primarily to visit strawberry fields for the purpose of examining their growth and amount of crinkle disease, he writes on October 20th: "At this time of year the crinkle disease can be easily seen and evidence of its severity was very pronounced in many fields of the Marshall variety where no care had been taken in the selection of plants. In every case Washington Certified strawberry plants showed less disease and much more vigor. I believe the strawberry growers are becoming convinced that considerable care is necessary in the selection of planting stock which is as free from crinkle disease as possible.....The can opening demonstration in Seattle showed that several of the Cuthbert x Lloyd George raspberry crosses are much superior to the common varieties for frozen berries. None of the Oregon station strawberry selections were superior to Ettersburg 121 when canned."

FRUIT AND NUT PRODUCTION

W. T. Aldrich, Medford, Ore.

Writing on October 15th he reports: "The past week has brought a striking change in the pear foliage appearance. More than half of the leaves have either turned yellow or fallen in most pear blocks, Here and there an Anjou and Winter Nelis Block which received a thorough September irrigation retains heavy green foliage..... Wise growers with the heavy soil types put in drain furrows throughout their orchards to reduce or prevent the accumulation of surplus water following winter rains.

"During two days with 14 SERA men John Grim and myself were able to obtain 20-gram samples of fibrous roots from each of the 12 new fertilizer plots in Block 4 at the station. These samples will be analyzed for total nitrogen, to give the nitrogen content of feeder roots prior to fall or spring ammonium sulphate applications in clean cultivation and in annual cover crop plots. Fruit bud samples from each of these 12 plots were also obtained. The fall application of ammonium sulphate will be applied just before the next rainfall.... Root concentration and distribution determinations for the normal and the 'cork' trees at the Dodge orchard were completed. No correlation between root concentration or distribution and cork occurrences can be found. This leaves root stock as the probable critical factor."

On October 22d he reported: "The pear market has continued with fair prices for Bosc, with \$2.20--\$2.40 per box on the New York auction for most of the offerings and with the most popular brands bringing as high as \$2.88 per box. The marketing outlook for Bosc is particularly favorable since one-third of the total Bosc production for the Pacific Coast has already been sold. On October 4, 1934, 26 percent of the Bosc had been sold, whereas at the same time in 1933 only 5 percent has been sold. This means that this season a much larger percentage of the Bosc crop is reaching the market during the warm weather which is so necessary for the proper ripening of the Bosc during the period between car unloading and fruit stand sale in New York."

C. P. Harley, Wenatchee, Wash.

"Weather conditions were 'made to order' this year for the Wenatchee fruit growers," he writes October 24th. "There was practically no rain during the main harvest period, but during this week we have had heavy rains practically every day and the orchards should go into the winter in perfect condition insofar as soil moisture is concerned. The lack of rainfall during the harvest period has reflected very definitely in our laboratory in the lack of calyx injury from soluble arsenic. Last year this condition was very prevalent. A few samples of this calyx injury were received but they were definitely traceable to improper washing.... Last week a delegation of fruit growers from Yakima visited the Laboratory to see the results of Mr. Reeves' little leaf experiments. Mr. Reeves took them to the King David orchard and they were very much surprised with the response of the trees to injections of zinc sulphate and, incidentally, the lack of response from various zinc sprays."

FRUIT AND NUT PRODUCTION

B. G. Sitton, Shreveport, La.

Writing from the U. S. Pecan Field Station on Oct. 20, he says: "Worked in laboratory on data collected during the past season. Over most of this territory no rainfall sufficient to set the soil has occurred since May 28. Since that date a total of 4.11 inches has been recorded, which occurred in 11 showers, the heaviest being 0.58 inch. Pecan foliage is badly scorched and much of it has shed. It is impossible to tell how long the trees have been suffering, but the first external evidence became apparent about a month ago. I do not expect this to materially reduce the pecan crop next year since there is no crop this year and the foliage was apparently in good condition of the season."

George F. Hoffman, Meridian, Miss.

"The planting of the winter cover crop (Austrian winter peas and vetch) was finished," he writes for the week ending October 20th. "The rate of seeding was 15 pounds of each drilled in combination. An application of 100 pounds per acre of 18 percent acid phosphate was made. Our cover crop work, with its resulting effect on the soil, is drawing favorable comment and has paved the way for the plantings of many acres of peas and vetch in nearby farms....Pecan growers generally are beginning their nut harvest and the crop as a whole is short and the quality of the nuts in many instances poor. Ungraded nuts of the Stuart and Success varieties are selling in the local stores at 34 cents a pound."

He wrote on October 13th that the heavy growth of summer cover crop in the pecan orchard necessitated a second plowing before a satisfactory seed bed could be made for the planting of the winter cover crop. "Following the heavy and almost continuous rain," he added, "rebanking or remounding of a good percentage of the newly-budded grape was necessary."

ADMINISTRATIVE NOTE

Mr. F. D. Richey, Chief of the Bureau of Plant Industry, announced November 3, the appointment of Dr. M. A. McCall and Dr. E. C. Auchter as Assistant Chiefs of the Bureau. In addition to their new duties, both Doctor McCall and Doctor Auchter will continue to direct the work of their respective Divisions.

Mr. H. E. Allanson, who as Assistant Chief has been in charge of the administrative operations for the Bureau, will continue in the same capacity with the title of Business Manager.

FERMENTATION AND BACTERIOLOGICAL STUDIES.

J. A. Berry, Seattle, Wash.

Writing from the U. S. Frozen-Pack Laboratory on October 6th, he says: "Some interesting observations have been made on the persistence of yeasts at 20° F. Since reporting the spoilage of apricots held 4 years at 20° F. by lactobacilli, two containers of the apricots have undergone fermentation by yeasts, after nearly a month's incubation at 70° F. The organisms concerned have been isolated, and some study of them started.

"Using grapes, we have started another study of the death rates of organisms in fresh and pasteurized and reinoculated fruit. I did this with strawberries two years ago, with apparently striking results, but am anxious to corroborate the previous work. The fresh grapes (commercial Concord) gave a count on wort agar of 78,000 per gram. Packing was done with 40° B. sirup.

"Mr. Marsh has now run a number of yeasts under aerobic and anaerobic conditions. He finds that without exception the cultures in vacuum give only one-half or one-third as many cells in 24 to 48 hours as those with free air supply. He has been using liquid fermentable media.

"That probably is the last pack of sweet corn for this district was put up at Snohomish yesterday, so fall is definitely with us. One frozen packer, however, is to freeze 25 tons of spinach, starting next week. He probably will use heavy parchment bags, which in turn are molded in stout paper boxes. This system has given good results with dry pack peas. We have done some work with corn-on-the-cob in parchment paper twists. The ear can be cooked in the twist, and the system seems to have merit."

ADMINISTRATIVE NOTE

Bills of Lading Mr. George B. Holmes, in charge of the Bureau's Property Room, writes us that he has been receiving quite a few exceptions taken by the General Accounting Office to shipments made on bills of lading. Practically all of these exceptions read: "Returned without our certification with request that 'Certificate of Issuing Officer' be completed over autographed signature of issuing officer. If f.o.b. point is other than shipping point shown on bill of lading, advise invoice voucher reference covering payment to vendor." Mr. Holmes suggests that we advise all field workers to fill out bills of lading issued by them by signing as issuing officer and indicating the f.o.b. point of shipment. We urge our workers to comply with these instructions, which it is believed will materially reduce the number of exceptions.

ADMINISTRATIVE NOTES

Plant Patents On a number of occasions a question has arisen relative to what the Department's policy should be in connection with a discussion of plant material which has been patented. In general, of course, we are not permitted to mention in correspondence or in our publications trade names, or to include statements which might be considered as advertising a particular brand or a commodity which is under the exclusive control of one manufacturer. Theoretically, fruit varieties which have been patented are under individual control.

The matter was taken up with the Chief of Bureau on October 4, and was discussed in a conference in the office of Dr. A. F. Woods at which were present Messrs. Boswell, Corbett, Gould, Magness and Mulford of our Division; Mr. H. N. Foss of the Solicitor's office; and Dr. M. C. Merrill, Chief of the Department's Division of Publications. The specific questions considered were:

1. Is it permissible to discuss by name, in letters or other correspondence, horticultural varieties that are known to be patented?
2. Is it permissible to include in Government publications descriptions of horticultural varieties or discussions of such varieties that are known to be covered by plant patent?

In a letter to Doctor Magness dated October 26, 1934, Mr. F. D. Richey, Chief of the Bureau of Plant Industry, takes up the matter and, referring to the conference in Doctor Woods' office, says:

"I am in accordance with the conclusions reached in the conference, set forth in a memorandum from Dr. Woods, dated October 8th... I see no reason why it would not be permissible to discuss by name in our correspondence or to include in Government publications descriptions or discussions of plant varieties that have been patented, care being taken to avoid any statements which might be construed as advertising.

"I also agree in the conclusion reached at the conference that it would be desirable to make clear in any such discussions or descriptions that the varieties mentioned are patented, in order to bring attention to the fact that the propagation of patented varieties is restricted."

It is suggested therefore that when patented varieties are discussed, either in letters or publications, including the word "patented" in parentheses following the variety name is desirable practice.

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November 15, 1934

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER.

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

Washington, D. C., December 1, 1934

No. 23

The Grapefruit in California.

We mentioned in the NEWS LETTER for November 1, the plan of the Citrus Committee of the Riverside, Calif. Chamber of Commerce to celebrate on November 20, the planting of the first Marsh grapefruit tree at Riverside, about 1890, by Mr. J. E. Cutter of the pioneer citrus nursery firm of Twogood & Cutter. Mr. Cutter planted the tree in his home yard, and it is still bearing fruit and in fairly good physical condition. The celebration included the unveiling of a tablet at the site of the tree, followed by a luncheon and a general discussion of the outlook for the grapefruit industry of the Southwest.

It is pleasing to realize that the bud selection work has gone along with the work of establishing grapefruit growing in the Southwest, and that a good bit of the success so far attained has been due to the elimination of the "poor layers" among the trees. Then, too, a superior strain of the Marsh grapefruit was isolated through the selection of a superior fruiting bud variation at Highgrove, Calif., and this strain it is that is now exclusively grown in the newer grapefruit plantings in the Southwest. An early-maturing strain of this variety, obtained through the selection and propagation of an early-ripening bud sport, now under commercial test, promises to be of great value to the desert grapefruit growing districts.

Incidentally, there are now about 17,000 acres devoted to grapefruit growing in California, and some 15,000 acres in Arizona.

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"Since the last report was turned in," he writes for the period from September 24 to October 6, "we have made a trip to California to study chestnuts.

"The most interesting material seen on the whole trip was a group of Castanea mollissima seedlings at Chico, Calif. While the group as a whole were small, a few of them showed good size with sweet flavor, and smooth kernels. In view of the fact that two outbreaks of chestnut blight have occurred in the Northwest, it would seem advisable to consider this type of material seriously. While it is not nearly as attractive as the European chestnuts grown by the Italians and Portuguese in California, it does make a very good product....

"It is reported that the filbert harvest is falling short of earlier estimates. Considerable concern has been expressed from various parts due to the appearance of worms in the thin shelled varieties such as the Daviana. This has been known for the last 12 or 15 years, and occurs sporadically, but apparently more extensively this year than before. This may be in line with the development of insect infestation in other crops, unusually heavy this year....

"Walnut harvesting is in full swing. The weather is extremely dry so that the walnuts, instead of cracking and falling out, tend to crack the husk and then dry at the end of the crack so that the nuts are not falling freely. Considerable husking by hand is necessary. In an orchard visited in the southern part of the State on the way home, from 50 to 80 percent of the walnuts will necessarily have to be husked by hand. We found one man with a husking machine, which to our knowledge is the only one in the State of Oregon. Normally, in the Willamette Valley there is no necessity of husking by hand unless the trees are shaken too vigorously."

C. L. Smith, Austin, Texas. (Texas pecans)

Writing on October 20th, he said: "At Uvalde Plantation near Uvalde the young orchard of about 900 acres was sprayed once with zinc sulphate in the spring and the results are amazing. Despite drought conditions and lack of irrigation water during the summer, most of the trees are nearly or entirely free from rosette. Trunk injections of zinc sulphate at the County Farm at San Antonio have improved the condition of rosetted trees but only a few of the treated trees are now entirely free from rosette....The drought has caused nuts under all except the best moisture locations to be very much undersized. Many of them are not half normal size."

FRUIT AND NUT PRODUCTION

We Transplant Some 10,000 Nut Trees! Our associate, C. A. Reed, has been pretty well occupied lately supervising the transplanting of some 10,000 nut trees from the nationally famous Bixby collection on Long Island to land under Federal supervision. Funds for acquiring the trees were provided by the Director of Emergency Conservation Work.

"The Bixby collection of nut trees," says the Press Release from our Office of Information, telling of the purchase, "which was started by the late Willard G. Bixby as a hobby in 1916 and continued until his death recently, was the largest and finest in existence. The trees acquired by the Government consist of black and Japanese walnuts, butternuts, sweet hickory, shagbark, shellbark, bitternut, and pignut hickory; Chinese, Korean, Japanese, and European chestnuts; American, European and Turkish filberts and hybrids of many varieties and species."

Most of the trees were of nursery size, 1 to 3 feet in height. The largest trees moved were about 18 feet high and 3 inches in diameter at the base. Approximately one-fourth of the trees eventually will go to the Shenandoah National Park. The remaining three-fourths were allotted to various divisions of the Department for experimental work, about one-third being added to the nut plantings on the Department farm at Beltsville, Md.

Approximately 700 trees were allotted to the recently acquired National Arboretum tract at Washington, D. C. More than 1,000 disease-resistant chestnuts were allotted to the Division of Forest Pathology of the Department.

"Producing the best in edible nuts is a difficult and lengthy process," admits Mr. Reed. "Every nut planted results in a tree and a product a little different from any other nut tree. Trees which are certain to bear fine nuts can be produced only by grafting scions from such a tree onto an ordinary seedling. Scions from the best nut trees which are found will go to State experiment stations for further trial. Those that finally do best will be put into the regular commercial channels."

This announcement of the latest attempt to improve the quality of nuts in this country, should come as a welcome Christmas gift to the growers, quite in contrast to the surprise awaiting a certain lady whose husband is reported to have been shopping at a fountain pen counter. "I want a smaller pen," he said. "It's to be a gift for my wife." The clerk, nodded. "A surprise, eh?" he suggested. "I'll say so," admitted the husband. She's expecting an automobile."

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"The entire week has been taken up with the almond work," he writes for the week ending November 10th. "Especial attention has been given to the evaluation of the nuts obtained from the breeding plots at Davis....Several nuts of promise have originated in this plot. Some of them will be useful for future breeding work, and some may be of value to the markets providing the blooming and bearing habits are satisfactory."

C. E. Schuster, Corvallis, Ore.

Writing on November 10th, he says: "The quality of the nuts continues to be very unsatisfactory for a large proportion of the orchards. Such a large amount of shrivel was present that it was practically impossible for them to separate the nuts. In many cases they are running the crops two and three times through the suction machines and the graders. All of this is seriously delaying the packing of the crop."

A. D. Shamel, Riverside, Calif.

Writing on November 13th, he said: "We have had more cool weather during the past week, and the Navel oranges are coloring rapidly in this and nearby districts. It is for this reason that some of the growers are straining at the leash and beginning to pick their crops. The rain of two weeks ago has covered our hillsides with a flush of green color and everyone is anxiously awaiting for another rain. The La Jolla weather prophets are predicting another dry year for us, but some competing weather prophets from Santa Clara are prophesying a wet winter. In the one case the predictions are based on ocean temperatures and in the other on sun spots."

BULB INVESTIGATIONS

Lily Hybrids We continue to find interesting comments on Doctor Griffiths' Go Abroad! new lily hybrids. Abbé H. Souillet (Curé de Milly par Gennes, Maine-et-Loire, France) contributing to the Royal Horticultural Society Lily Year-Book, 1934, No. 3, London, says: "Dr. Griffiths, the American Lily cultivator, has given us in these hybrids really choice plants, which will surely have a great future."

The Abbé is reporting that the Kulshan, "Sacajawea and Shuksan" did wonderfully well with him. Planted in a compost rich in humus, they reached a height of 3-1/2 feet and had numerous flowers, marbled and speckled. He found the Kulshan best for vigor under his conditions, and he writes that its flowers, which were evenly and densely speckled, appeared to be particularly remarkable.

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Mr. Harmon has just completed summarizing some rooting tests carried on during the summer months with soft wood cuttings of the rootstock Solonia x Othello No. 1613," says the report for the week ending November 3. "Rooting tests of soft wood grape cuttings were made during the past summer in order to study the feasibility of propagating grapes by soft wood cuttings during the summer months in this climate. Quite often it is desirable to obtain a rapid increase in grape plants of an important new variety, a seedling, or a bud selection.

"Four test series were made, extending from April 6 to September 29. Each series extended approximately 44 days in order to determine the rooting possibilities. One and two bud cuttings were taken from the base, middle, and tip sections of growing grape shoots. A mature leaf, a portion of a mature leaf, the second leaf, and no leaves were left on various lots of cuttings. Sand, sand and peat, and sand, soil and leaf mold were used as rooting media. Lug boxes 7x18x24 inches were used for growing the cuttings. These boxes were covered with whitewashed glass frames and held in greenhouse shaded by whitewashed glass in an effort to keep down the temperature and control the humidity as much as possible. One hundred and fifty to three hundred cuttings were used in each series.

"Some of the results of these tests might be indicated. The first series starting April 6, representing early season growth, rooted poorly. This may have been due to faulty technic, especially in drainage of soil, or the growth might not have been sufficiently advanced to contain the necessary stored food. The second to fourth series, starting May 11, June 25, and August 10, gave very satisfactory results. A slightly higher percentage of rootings were obtained from 2-bud than from 1-bud cuttings. As a rooting medium, sand and peat gave better results than a soil mixture. Cuttings with a leaf or portion of a leaf gave a higher percentage of rootings than those without leaves. In general, the cuttings made from the growing tips of the grape shoots did not root; however, the section of the growing shoot from which the cuttings are made needs further study. First season results indicate that from 50 to 70 percent of soft wood cuttings of Solonis x Othello No. 1613 can be rooted in a shaded greenhouse if proper media and technic are used, even during the hot summer weather of the San Joaquin valley in California."

He had written October 31: "Stocks resistant to nematode still continue to be a point of interest to growers visiting the station... Visits have been made to commercial vineyards in a number of cases to determine the cause of lack of vigor of vines. On sandy locations, nematode has been the great contributing factor to weak growth. As an example, an 85-acre vineyard was visited which was sold for \$200,000 during the high prices, but which is now showing so much weakness due to nematode injury that it can be bought for \$17,500. Even granting the decrease in price from the period of high prices, this indicates the condition of the vineyard now."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on November 3, he says: "The crop on all the trees in our experiments is very light. Trees that should produce 30 to 40 pounds per tree do well to average about 2 pounds; and trees that should bear 75 to 100 pounds of nuts, do well if they produce 4 to 5 pounds. The variety Moore is the only one in our experiments that has yielded sufficient nuts again this year to pay for the cost of production. The varieties Teche and Curtis are producing good crops this year, but unfortunately there are very few trees of these varieties in the Albany district."

He has written October 27th: "The Stuart nuts from the orchard thinning experiment at DeWitt were harvested and sized. The crop in this orchard was very small, but the data secured indicate the results which may be expected to follow the thinning of the stand of trees in old orchards. The block of trees which were thinned to a distance of approximately 65 feet on the diagonal yielded, on the average, 8.0 pounds per tree, while the unthinned trees which were spaced 46'8" on the square, yielded 4.0 pounds per tree. The size and quality of the nuts from the trees having a wide spacing were appreciably greater than those from similar closer-planted trees. Rather severe pruning to reduce the tree size, as well as liberal applications of nitrogen fertilizers to unthinned trees, both resulted in a smaller crop of poorer quality nuts than was produced by similar unthinned trees not so treated."

"The results obtained in this orchard, although the yields have been very small, were furnishing growers in this section with information which they are using. Because of this experiment, the results obtained in the Barnwell orchard, and the generally poor crops in the old orchards again this year, thousands of trees will be cut out this winter. The Barnwell Pecan Groves Co., in the winters of 1930-31 and 1931-32, cut out over 4,000 trees. This year they have one of the heaviest, if not the heaviest crop of nuts that can be found in an old orchard in this section. Tree cutting operations have already started for this winter--Mr. J. M. Patterson has started thinning his grove."

B. G. Sitton, Shreveport, La.

"Reports from Mr. Butterfield on Winona, Tex., are that he will have a fair crop of pecans and that the quality is better than had been expected. We are especially interested in one block of Delmas which is better than for several years previously. Combined experiments of spraying for scab and black aphid, irrigation, thinning and fertilizers have resulted in good quality."

FERMENTATION AND BACTERIOLOGICAL STUDIES

J. A. Berry, Seattle, Wash.

"Regarding the vexed question of greater microbial 'kill' at the higher cold storage temperatures, the packs of sirup inoculated with yeast are now showing definite indications that the phenomenon is observable here also," he writes on November 10th. "We are working with both 5 percent and 45 percent sirups. I am at a loss to explain why cider, 13° B., did not follow the rule.

"The work with stale cider as a deterrent to yeast growth has received some attention. It is rather slow, as the initial fermentation must run to completion--a matter of 2 weeks. As was rather expected, the addition of pieces of apple to stale cider 'rejuvenates' the fermentation. Nevertheless the possibilities have not been exhausted, and the problem is worth some more exploration.

"At odd times we have made up a set of buffers, and standards covering the usual pH ranges, with the necessary blocks to hold them. The cost, not counting time, is a fraction of what we should have paid commercially for an outfit equally good.

"Analyses of our berry packs will be finished in 2 months or less, when full reports will be made. The addition of CO₂ has not accomplished a great deal. It appears to do nothing at -5° F. storage. Some sharpening of the taste of the berries occurs, which most people consider no disadvantage. There is a possibility that the keeping qualities of carbonated fruit after withdrawal from cold storage are better than routine-packed fruit, and the last half of the packs will be tested with this idea in view.

"Movement of fruit from the dock is slow. The SS LOCH KATRINE took a mere 5 cars of apples, with capacity for 150 cars. The outlook for fruit export is not at all rosy."

DOCTOR GALLOWAY HONORED

Among six new distinctive varieties of chrysanthemums originated by hybridizers of the Bureau of Plant Industry and named recently by Mr. Richey, is the Beverly T. Galloway, named in honor of the first Chief of Bureau of Plant Industry, now retired. Doctor Galloway was chief of the bureau from its creation in 1901 until March, 1913. The new chrysanthemum resulted from the cross-pollination of the varieties Lady John Foster and Purple King, and is a rosolane purple seedling of the large-flowered Japanese type, with petals showing a pale rosolane purple reverse.

If there is anything in a name, the new chrysanthemum is apt to prove the hardiest of its kind! The Doctor's legion of friends will be pleased to learn that he looks good for at least 50 more years! So perhaps we should say that it is the chrysanthemum which has been honored.

FRUIT DISEASES

H. F. Bergman, Amherst, Mass.

Writing from the Cranberry Disease Laboratory on November 17th, he says: "I returned to Amherst just last night after spending the week at East Wareham getting out samples of cranberries for the second storage test. Mr. Truran also spent the week there assisting in this work.

"Many of the berries, especially unsprayed lots, were in very bad condition. Sprayed lots were much better. The results of dusting with a combined fungicide and insecticide showed up much better this time than on earlier examinations. It now appears to me that there may be a possibility of using this particular combination of a mercurial-pyrethrum dust with satisfactory results, although it is evident that at the greatest strength at which it was applied this year there is too much danger of injury to the vines and the crop to make it a really satisfactory material.

"The demand for cranberries is much better this year than it has been for the past two years. Prices have been very good. Howes are now quoted at \$14.00 per barrel and moving out rapidly. The Cranberry Sales Company has already shipped out all berries held at their warehouse at Tremont, and many growers have shipped out all their berries.

"The usual work of sanding and bog improvement is now in progress, being facilitated by favorable weather. The rainfall in the cranberry area has been below the normal during the summer and fall, which may make some growers short of water for winter flooding."

He had written November 3d: "Mr. Truran and I have been in East Wareham most of the week examining cranberries in the first storage test of the season. Although none of the spray plots received more than two applications this year, the berries from sprayed plots show much less rot than those from unsprayed plots."

CRANBERRY TIME

Under this title the Department's Press Service sent out a "release" November 25th announcing that cranberry growers have the shortest crop in many years, "but even so there will be enough for Thanksgiving dinners. A good share of the crop every year is consumed on two days--Thanksgiving and Christmas." The announcement points out the interesting fact that the name by which a farmer refers to his field of cranberries depends upon the State in which he lives. In Massachusetts and New Jersey it is a "bog," but in Wisconsin it is a cranberry marsh. Incidentally, it says several plantings are known to be almost 100 years old, and still producing good crops. Our work on the control of "false blossom" should add to the number of these centenarians!

FRUIT DISEASES

J. R. Cole, Shreveport, La.

Writing from the U. S. Pecan Disease Field Laboratory on November 10th, he says: "I am finding more of the bitter pecans (*bitternut*, *Hicoria minima*) that have the bunch disease near the Skannal orchard each time that I search. The disease is very spotted along the bayous; sometimes there will be a strip for 100 yards without a diseased tree, then the next 100 yards may have several of the trees. In one particular place, where B. G. Sitton has been trying some propagating experiments, the disease is especially abundant and altho I have not made a count as yet, I believe a safe estimate is 5 percent of the trees are diseased. I also found four small bitter pecans that have had the disease and are now dead, but of course I cannot say that the disease killed them."

He adds: "We have had 1 inch of rain and the weather has turned cooler." He has written on November 3 that all records for prolonged drought had been broken. The Shreveport Journal of November 1 mentioned that a five-month period had passed with only 3.6 inches of rain—and "all-time" record for dry weather, according to the local weather observer. "It is my opinion," writes Mr. Cole, "that if I had planted any trees here this year, I would have lost most of them."

Reporting for the week ending November 17th, he writes: "The first part of the week I drove to Lake Providence and harvested the nuts in the foliage disease spray plots. The nuts were of very good quality on the sprayed and unsprayed trees, altho I have not made any cracking tests yet. However, the foliage was still almost free of the foliage diseases in the sprayed plots; that is, where the trees were not too large to be reached by the spray, while the check trees were defoliated by the downy and liver spot diseases."

"The Moneymaker was the variety sprayed, and best results were secured where the spray was applied in early May and June. The downy spot was not completely controlled, but it was held in check. There is also a good demonstration of not being able to spray large trees (about 80 feet tall) with small spray outfit. One can tell to the limb just the height that the spray reached."

NEWS LETTER

We need a few copies of the June 1, 1934, and July 15, 1934 NEWS LETTER. If you happen to have copies you do not need, please mail them (under frank) to John A. Ferrall, Bureau of Plant Industry, Washington, D. C. Room 3949 South Bldg., U.S. Dept. of Agriculture.

FRUIT DISEASES

Paul W. Miller, Corvallis, Oreg.

"In previous reports, mention was made of the fact that catkins were dropping prematurely on many varieties of filberts, particularly in the DuChilly and Daviana varieties," he writes on November 17th. "Up to the latter part of October we had had little or no rainfall in Oregon since the middle of June. Consequently when we could find no organism or insect associated with this premature shedding of the catkins the thought occurred to us that the prolonged dry spell which prevailed during the growing season may have been responsible, in part at least, for this premature dropping of the catkins.

"Since then we have had lots of rain. In fact, we have had so much rain that the excess for the period beginning September 1 to date is about 6 inches above normal. In spite of this abnormal amount of precipitation which has occurred since October 20, the catkins continue to drop. A survey made during the week indicates that more catkins are shedding in the DuChilly and Daviana varieties than in the Barcelona. Since the DuChilly and Daviana are the chief pollenizers for the Barcelona, the situation is becoming serious, for a loss of catkins in these two important pollenizing varieties means a marked decrease in next year's filbert crop. In view of the fact that the catkins are continuing to drop in spite of the abnormal amount of rain which has fallen, it would appear that a lack of moisture is not the most important factor concerned with the dropping of the catkins, although it may be associated with it in some way.

"The weather during the week just past has been rainy, with the temperature very mild. The catkins on the Barcelona variety are beginning to shed pollen. We have never in our experience seen Barcelona pollen flying this early in the season. Furthermore, the tip ends of the stigmas of some of the early pistillate flowers on the Barcelona are also visible. If the temperature continues mild the Barcelona will be in full bloom by Christmas, something which we have never seen before."

Howard E. Parson, Spring Hill, Ala.

"Harvest has been made from rosetted trees soil-treated with zinc sulfate for two years," he writes under date of November 17th. "The yields are small yet, and no conclusions can be drawn from the difference in yield from different plots. It was reported earlier in the season that remarkable improvement of the rosetted condition was showing up in treated trees. This difference shows up even more strikingly now since die-back of the most severely rosetted twigs has appeared. There is very little die-back in treated trees. At this time, the foliage has a more vigorous appearance, there is less defoliation, and a greater amount of vigorous twig growth on treated than on check trees. The improved condition of treated trees should be unmistakably reflected in the yield in the next few years."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

Writing on November 5th, he says: "During the past two weeks the experimental pack of grapes for storage has been prepared. This season the work with sodium sulphite has been continued, trying various methods of applying it to lug and sawdust packs. In addition, a packing media other than sawdust has been sought, one that would be less expensive and impart less taste to the grapes. In this connection, rice hulls are being tried with and without the addition of sulphite and moisture.

"This season has witnessed the commercial application of the acid sulphite method of packing grapes. Three packers have packed carload lots of Emperor grapes in sawdust treated with acid sulphite under our direction, and several others have expressed their intention of packing a small number of lugs for their own observation. To date, possibly 15 or 20 carloads of sawdust-packed Emperors treated with sulphite have been shipped....

"The grape season is about over. A few Emperors are still being shipped, but other varieties are for the most part completely harvested.

"For the first time in several years, rainfall exceeds normal, amounting to about 1-3/4 inches. This may not be much rain for notoriously damp places, *but it is enough to make much conversation in the San Joaquin valley."

Edwin Smith, Wenatchee, Wash.

"Practically no injury from washing or arsenic burn has been observed on samples from our washing experiments. Despite rainy weather there have been few current reports of burning in commercially packed fruit. However, there have been exceptions and with these the injury has been largely black lenticel burning. Mr. Ryall worked with one grower where this lenticel burning appeared even after the Winesap apples had passed through warm water. With such fruit the situation seems hopeless if the fruit cannot be cleaned with a cold solution." The foregoing, referring to Winesap apples only, appears in the report for the October 26-November 3, period.

"Most packing houses in the Wenatchee district have finished apple packing for the 1934 season," continues the same report. "In the Yakima district packing continues, more fruit having been stored before packing than was done in North Central Washington."

*Personal and Confidential: I had to omit "such as Seattle," W. T. You know very well it would just upset H.C.Diehl. They call 1-3/4" a mist! JAF

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash. (continued)

"The apple industry has been experiencing a slow decline in spirits from the rather high hopes prior to harvest," he writes on November 13th. "Statistically the national apple crop promised as good returns as were had last year. Early prices were based on this belief. However, three factors have interfered with the realization of these hopes. They are the large sizes, failure of export demand, and the early season of harvest.

"Such a large percentage of the apple crop consists of large sizes that supplies for domestic markets have been amplified and, moreover, the sizes in greatest demand are not available. Shippers have difficulty in filling Delicious orders for sizes 163 to 100, while the trade does not want sizes 100 and larger, which would run heavy to 88 and larger.

"The German economic situation has largely eliminated orders from such important markets as Hamburg, Bremen and Rotterdam. The domestic market has shown enough interest in small-sized Winesaps to interfere with British buying.

"The early season caused apples to go into storage with advanced maturity. Delay before storage caused more than usual depreciation in storage quality owing to the early harvesting season with attenuating high temperatures. Cold storages were overloaded with warm fruit and failed to provide optimum temperatures during September and October. Now the advanced degree of ripeness, with evidence of decay in Jonathan, Delicious, Spitzenburg and other early or intermediate varieties, is forcing the sales agencies to market fruit before demand calls for it, with the result that large sizes in Extra Fancy Delicious are selling as low as \$1.00 f.o.b., and eastern auctions are making returns even lower than this figure.

FRUIT DISEASES

M. A. Smith, Springfield, Mo.

Writing from the Ozark Fruit Disease Laboratory on November 17th, he says: "The beneficial effects of irrigation of apples during the late drought were evident in a block of Red Delicious near Marionville. At harvest the owner picked 3500 bushels of apples, 3000 bushels of which were in the U.S. No. 1 grade. A nearby block of Delicious which was not irrigated yielded 3240 bushels--a large percentage of which were below the No. 1 grade....

"An orchard containing apples, cherries, plums, peaches and grapes has just been set out on the grounds of the Department of Justice Medical Center which is located near Springfield."

DISEASES OF TRUCK CROPS

W. D. Moore, Charleston, S. C.

"The season on beans, just closed, was one of the best that I have seen from the standpoint of market prices," he writes November 17th. "All growers who had good quality beans made a nice profit on their operations. Mildew, while rather heavy early in the season, did little damage as a whole, due probably to the sudden change from a prolonged rainy period to one of no rain and fairly high temperatures. As has been the case for the past two years, I have had no reports of either bacterial blight or anthracnose in appreciable quantities.

"I have devoted all of my time during the past two weeks to harvesting my various bean plots. Our mildew control work has again demonstrated the value of sulphur dusts in controlling this disease on fall beans. None of our varieties show enough mildew resistance to warrant any change in present grown varieties. Our mosaic work is rather outstanding in that it is giving us some definite information as to the effect of this disease on yield and quality of this particular crop."

EARLY SHEDDING OF FILBERT CATKINS

D. E. Schuster writes on November 17th from Corvallis, Ore. that while in the field near Eugene, Ore. the day before he found the Barcelona catkins shedding pollen. So far as he knows this is about six weeks earlier than it has been recorded before. "We have not gone through the data carefully," he adds, "but to have pollen shed before Christmas is something which has apparently not been observed before.

"In connection with this, we find that the pollenizers, particularly the Daviana and DuChilly varieties, are shedding catkins quite heavily... We saw heavy fall of catkins in 6-year-old orchards on good river bottom land. Apparently the rains and cool weather have not stopped it."

ADMINISTRATIVE NOTE

Sick Leave Thanks to the Press Service, the notion that Federal employees take full advantage of sick leave privileges--and more--should be as dead as the proverbial doornail. A release just being distributed points out that while Federal employees in Washington are allowed a maximum sick leave of 30 days for any year, the report of Dr. W. W. Stockberger, in charge of personnel in the United States Department of Agriculture, shows that a checking of records for 8 years reveals the fact that employees averaged only 7.5 days of sick leave each year! For this 8-year period, 27 percent of the employees did not take any sick leave at all within the year, while only 5.6 percent took the full 30 days.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I--M O N T H L Y N E W S L E T T E R

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. VI

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No. 24

Science Meeting. The Division will be represented by more than 30 papers on the programs of the various sections of the meeting of the American Association for the Advancement of Science at Pittsburgh, Pa. December 27 to 29, 1934. The majority of the papers will be on the programs of the American Phytopathological Society and the American Society for Horticultural Science, and most of them will appear later in the printed proceedings of these societies.

Meetings of this type, of course, offer us an excellent opportunity to present some of the more technical phases of our investigations to groups of specialists interested in similar work, so that we not only get reactions that are important in developing our work, but often find it possible to initiate helpful cooperation.

For that matter, we have found that addresses are quite likely at times to exert a greater influence than our publications, especially where our workers are able to appear before key men of various industries or sections of industries, as at conventions of trade associations, manufacturers' groups, farmers' meetings, and the like. Such talks, like the addresses before the American Association, usually find their way into the printed proceedings of the meetings, and thus go along with our use of outside journals in getting our product, information, into the hands of the "consumer" promptly and effectively. We are continually making more and more use of these mediums in the distribution of our findings in an effort to get our results into the hands of those who can use them profitably without any loss of time. During the past year, for example, we have presented phases of our work in more than 200 outside journals, proceedings, etc.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

Writing on November 26th, he says: "Last Tuesday, November 20, we celebrated Riverside Grapefruit Day. A tablet was unveiled by the D. A. R. commemorating the introduction of the Marsh grapefruit variety into California from Lakeland, Fla. This tablet also honored the pioneer nursery firm of Twogood & Cutter, and particularly J. E. Cutter, who planted one tree of this first importation in his yard in 1890. This tree is still in good physical condition, and produces good crops of fruit....."

"Only a small amount of Naval oranges has been picked thus far in southern California, but about 1,300 cars were picked and shipped from Central California, Tulare County, last week."

W. W. Aldrich, Medford, Ore.

"Water accumulation in tree holes, dug some weeks ago, illustrates very clearly the effect of soil packing upon water penetration," he comments in his report dated November 26th.

"Tree holes, dug in what was for three years a roadway in the orchard, are completely filled with water. The same is true for tree holes dug on the site of an old straw stack. However, all other tree holes show very little water accumulation. It is quite evident that the packing of the soil by travel and by weight of the straw stack very materially reduced water penetration. This suggests one very good reason why trees beside an orchard roadway so frequently are less vigorous than those further from the road. I believe this lack of water penetration is a more important factor than dust deposit on the leaves of trees along the roadways in this district.

"Most of the week was devoted to the preparation of the last of the manuscripts for the American Society for Horticultural Science, "Evaporating Power of the Air and Top-Root Ratio in Relation to Rate of Pear Fruit Enlargement." The results reported show that decreasing the leaf area, without changing the leaf fruit ratio, resulted in increasing moisture supply to the leaves and fruit after the soil moisture had dropped below above 40 percent of the available capacity.

"Mr. Work's soil and moisture data for trees with $1/5$ of the roots removed indicate that after root removal the remaining $4/5$ of the roots do not extract soil moisture more rapidly than roots on a normal tree. In other words, with decreased root area, the rate of soil moisture extraction would not speed up in the remaining roots."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"The harvest from the trees in the breeding experiment has been completed," he writes in his report for the week ending November 17th.

"The crop in this orchard was extremely light again this year, and it is interesting to note that the only trees bearing nuts this year were those which had plenty of space. This orchard was planted with the trees close together and with the dry weather which has prevailed during the past four years, the trees have suffered greatly from lack of moisture. As the trees fruit, the undesirable ones are cut out, thus giving the remaining trees more room, and this practice is relieving the situation somewhat....."

"The weather continues extremely dry and unusually warm for this season of the year. We have had no rain since early in October, and the good to fair stand of winter cover crop which we had on the station farm has been severely damaged by grasshoppers, and the soil has become so dry that many of the cover crop plants have already died and others are so badly wilted that it is doubtful if they would recover if rain should come.

C. F. Kinman, Sacramento, Calif.

Writing on November 17th, he reports: "On October 13th, I wrote that in some parts of the Sacramento Valley most fruit buds of the Bing cherry were showing signs of growth. Very soon after that new green tips were noted on Lambert, Royal Anne, and other late ripening varieties. Only rare traces of growth have been found on buds of Chapman, Tartarian, Burbank, and other early ripening varieties. The above conditions were found to prevail in valley and foothill districts of Central California and also in the Yucaipa and Banning fruit growing districts in Southern California. I have not visited other cherry-growing localities."

C. E. Schuster, Corvallis, Ore.

"We noticed this week that some of the walnut varieties have already shed their bud scales," he writes, for the week of November 19-24. "This behavior is comparable to what we had noticed in the pears in the Rogue River Valley 6 weeks ago. With the filberts shedding pollen, female flowers coming out, and the walnut buds shedding the bud scales, we are wondering what will occur next.

"The weather up until today has been warm, with steady heavy rains. Today has shown the first indications of cool weather. Among the native plants, some have already shed leaves and are putting out new leaves."

FRUIT AND NUT PRODUCTION

J. L. Pelham, Shreveport, La.

Writing on December 1, he says: "Rainfall for the week ending December 1 was 3.36 inches, and for the month of November 8.16 inches. The first killing frost occurred on Saturday December first, with a temperature of 31.5°F.

"The cover crop is now growing nicely, indicating that it was not seriously damaged by the dry weather incurred after planting."

He had written November 24th: "During the period from November 19 to 21, a total rainfall of 4.09 inches occurred. This is the first real rain since May 28, as previously reported. The soil is now thoroughly wet."

B. G. Sitton, Shreveport, La.

"During the period from November 12 to 19," he writes under date of November 24th, "a trip was made to various points in the southern part of the State searching for seedling pecan trees which bear nuts of good size and quality, and which have a production large enough to be profitable. The special reason for this trip was that none of the named varieties now in existence are producing satisfactory crops in the southern half of the State, largely due to disease and insect attacks.

"It would seem possible that there are a few native trees in the section which have at least partial resistance to these diseases and which might be worthy of introduction. I found some six or eight trees which bear nuts of moderate size and of high quality, and which are worthy of observation for a number of years to learn of their behavior. Most of the nuts, however, were rather small; too small in fact, to warrant receiving very much consideration. The pecan crop is very short over the entire State this year and it is possible that another year I may find trees which were not bearing this year, but which have good pecans."

C. L. Smith, Brownwood, Tex.

Writing on November 10th concerning Texas pecans, he says: "The nutrition experiment at Bowden's grove at Rising Star was checked, and trunk measurements made. Excellent responses are indicated from the use of nitrogen."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"On November 23 and 24," he writes, "over 7,000 seeds were planted in flats in the greenhouse. These seeds were the results of controlled crosses, backcrosses with seedlings, and selfed seeds of standard varieties. Flats, seeds, and soil were sterilized...."

"The vintage season for 1934 is practically at an end, although some shipping is still continuing and the crushing of some grapes is still going on at the wineries. Some cull grapes and rain damaged grapes in the Northern counties are now being used for distilling material and grape brandy. In the Napa Valley, many growers made up their own grape crop into wine on account of the low price and the lack of demand from the larger wineries."

IRRIGATION IN OREGON PEAR ORCHARDS

"Studies of the Irrigation of Pear Orchards on Heavy Soil near Medford, Oreg." is the title of Technical Bulletin 432, by M.R. Lewis, P. A. Work and W. W. Aldrich.

The bulletin reports on investigations carried on under a cooperative agreement between the Bureau of Agricultural Engineering and Plant Industry of the Department, and the Oregon Agricultural Experiment Station.

The practice of irrigating the pear orchards of the Rogue River Valley, wherever water for irrigation is available, has become almost universal in recent years. Commercial orchard experience has demonstrated that irrigation is of value in the production of satisfactory yields of fruit of marketable size, but no definite information has been available heretofore to orchardists as to the proper frequency, amount, or time of application of irrigation water.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

"Some vegetation apparently 'thinks' spring is here," he writes on December 1. "Scotch broom and dogwood are getting ready for early blooming while marigolds, chrysanthemums and other later flowers continue to bloom profusely. Pipe raspberries, albeit of none too good quality, are still being picked in the Puyallup Valley, and winter dormancy seems to be far off. The danger in such a situation lies, of course, in the possibility of sudden low temperatures with vegetation in such a succulent condition.

"The danger of destructive rises in river levels is constantly imminent with such weather prevailing."

SEARCHING FOR BEST NATIVE NUT TREES

An announcement sent out by the Department's Press Service tells of the search being inaugurated under the direction of C. A. Reed, to locate native trees which produce nuts well above the average in general merit. He hopes to secure varieties which will not only make ornamental shade trees, but which will also produce excellent food.

Every seedling nut tree, of course, varies somewhat from its parent. It may be a little better, or a little worse. The only way to grow nut trees certain to produce fine nuts is to grow them from scions taken from trees producing excellent nuts. Thus, any trees producing superior nuts are valuable not alone for the nuts, but also as a source of scions for grafting.

"In a nutshell," says Mr. Reed, as quoted in the Press Release, "this is a cooperative plan for advancing nut culture in this country. It is not a get-rich-quick scheme for any one. The Department is not buying nuts, although we will send the names of dealers to those who have nuts for sale. Some State organizations are offering cash prizes for the best nuts grown within their State, and the Northern Nut Growers' Association is conducting a general contest for the best black walnut, butternut, hickory and native hazel which may be submitted."

Mr. Reed is inviting persons who have black walnut, butternut, hickory, northern pecan, native hazel or even beech trees that bear nuts of excellent quality to send him a sample for examination. He would like even sweet acorns that are good to eat. The sample, about two pounds of the larger nuts, and about a pound of the smaller varieties, should be wrapped securely, carry the name and address of sender, and be mailed, along with a letter containing full particulars concerning the samples, to "C. A. Reed, U. S. Department of Agriculture, Washington, D. C." Each lot should be carefully marked as to the tree from which the nuts came. Only first-class and superior nuts should be sent, but samples may be supplied from more than one tree, in case the grower has several trees bearing unusually fine nuts.

As indicated above, the Department isn't buying any nuts, but not later than February 1, Mr. Reed is promising, a report by letter on the merit of all nuts in comparison with others, will be sent out. If a person has a superior nut tree, that fact will be made public, too, so that interested parties may purchase scions.

Of course, no significance should be attached to the fact that this request for nuts is being sent out shortly before Christmas!

DISEASES OF ORNAMENTAL PLANTS

Frank P. McWhorter, Corvallis, Ore.

We--editorially speaking--have gradually adjusted ourselves to the fact that biannual means ever half year, while bimonthly means every two months. But it seems to us that it is carrying the thing a little too far when Frank McWhorter mails in a report every six or seven months, and labels it "Weekly Report." However--

"During two recent trips," he writes on November 16th, "I have gathered further information on the abnormal conditions which we have been calling rose mosaic. I write 'calling rose mosaic,' since a letter from Phil Brierley proves that what we thought was mosaic is something else, and that what we don't know is what rose mosaic is. When on Hybrid Tea, it is mosaic; when it is bad on Manetti it is worse than on Hybrid Teas, but when on Manetti it isn't. The economic problem remains: Explain to growers that their roses exhibit two different abnormal conditions, one of which is mosaic. That these two conditions appear indistinguishably similar most of the time--but that they must distinguish between them and rogue out the mosaic one! It is a bit crowded in Washington, no doubt, so we and the growers will welcome Dr. Brierley; he is needed.

"Since I don't know what we have done on rose mosaic, I am going to tell something about holly. This is timely since sometime this week the Chief of our Inspection Office is going to tell how holly growing has gotten into big business. It would be bigger, however, if all the buyers preferred the Oregon brand of 'scale' which our holly delights in, and were it not for the canker which cuts down the yield. Year after year we receive packages of holly considered of doubtful decorative value; usually these are weighty matters, which should have been sent to the entomologists in the first place, but sometimes they are examples of canker. The canker specimens are usually accompanied by a letter which simply states: 'The trees are dying.' In typical specimens the green of the bark is replaced by dark brown blotches.

"Hitherto these specimens (even when placed UNDER a microscope) have proved barren of mycological significance, and cultures evolved no probable organism. This season we have been more fortunate. First we received one specimen which evidenced a Diplodia fruiting in boundary areas between the healthy green and the decadent brown. We became excited by this mycological titbit and were almost ready to describe it as a Diplodia canker even though the Latin record attaches only 'emortuorum' quality to Diplodia on this host. Then a county agent brought in the remnants of an almost entire holly tree rapidly becoming emortuorum. We awoke to find peeking beneath the brown skin a few rotund pycnidia--these were not Diplodia growths but Phomopsis fruits. This would indeed be a likely cause. The wilting of branches and the scarcity of fungus fruiting would be in keeping with this etiologic concept. The usual routine will be followed, whereby the canons of pathogenicity are established, and we can henceforth appease the growers of cankered holly by stating for them the name of the fungus responsible."

FERMENTATION AND BACTERIOLOGICAL STUDIES

J. A. Berry, Seattle, Wash.

Writing on December 1, he says "Analyses of carrot, spinach and celery juice stored at -5° and 20° F. for 3 weeks shows as expected a decrease in microbiological numbers, especially in the case of the two latter which had the higher initial counts. With these two juices the 'kill' is some 60 percent, and so far one temperature seems to be about as deleterious as the other. As previously mentioned, a storage temperature of 20° F. was more prone to result in the formation of large flocs, which tended to spoil the appearance of the product.

"We have been running some freezing and thawing experiments. On yeasts at least alternate freezing and thawing results in a quicker 'kill' than continuous freezing. We have worked with water suspensions so far, but provided that our laboratory assistance continues available, plan to study suspensions in salt and sugar solutions. The study is not without practical aspect.

"An invitation to put on an exhibit at the annual Northwest Cannery and Barrellers Convention, January 4, 5, and 6, has been received by the Laboratory. The convention will be in Portland this year. We have a few new items to display."

ADMINISTRATIVE NOTE

Christmas Mailing. The Postmaster General has issued his usual request that all Government Departments withhold from the mails from December 15 through December 24, 1934, all bulk mailings of forms, pamphlets, books, and other printed matter, as well as supplies for regional offices.

These bulk mailings not only seriously interfere with the expeditious handling of Christmas mails, but, owing to the heavy weight of many of the sacks, they no doubt cause some damage to the parcels mailed at that season of the year.

Employees, both in Washington and at field stations, should comply with this request to the best of their ability, not sending out bulky mail which could without serious interference with official work be held until after the holidays--or at least until after Christmas.

Except in the case of supplies urgently needed, etc., we will not send out bulky mail shipments from Washington during the December 15 - 24, 1934 period.

HOW MANY APPLE VARIETIES?

Questions are asked frequently as to the number of apple varieties that are now being grown. Various answers have been given from time to time, but as a matter of fact, says Mr. H. P. Gould, who has delved into the statistics a good bit deeper than most, no one can possibly know what the number actually is.

In the first place, he contends, any group of a dozen people would probably have about 12 different conceptions as to what constitutes a variety; in the second place, new varieties appear so rapidly that any theoretical enumeration which might approach completeness on a given date would be out of date, practically speaking, on the next day.

Probably less than 40 varieties make up at least 90 to 95 percent of the apples that are marketed in carlots in the fresh state. But hundreds of other varieties are grown more or less, most of them on a non-commercial basis. They are in gardens and home orchards; they represent comparatively new and untried sorts; they represent great numbers of old varieties that were planted in an earlier day but which the nurserymen have long since ceased to propagate because, in the changing status of apple growing from amateur production to an extensive commercial orchard basis, the demand for such varieties has not been sufficient to justify the expense of propagation. Again, there are numberless varieties of local value, and which are highly prized among those who know them, that have never been in the trade commercially and never have been disseminated far from their place of origin--but they are varieties, and each counts one, if an enumeration of the number of varieties in cultivation is to be made!

There is a rather definite trend among the nurserymen to decrease the number of apple varieties which they propagate. However, they doubtless propagate, as a rule, varieties for which they have any considerable demand. There may be an occasional exception in something which is very difficult to propagate or to handle in the nursery, and for that reason, it doesn't pay to handle it.

In 1892, Dr. L. H. Bailey reported that for that year 95 nursery catalogs from 40 different states and from one or more Canadian provinces listed 878 varietal names of apples and crabs. An effort to segregate the synonyms that were included resulted in about 735 distinct variety names of which about 40 were of crabaapples.

In 1910, a similar examination of 100 representative nursery catalogs from 32 states gave a list of 472 different apple varieties and 59 crabapple variety names. A check-up made it apparent that had another hundred additional catalogs been examined in the same way only a relatively small number of variety names would have been added to the list.

Our Division, as a matter of convenience for quick reference, maintains an index of the fruit varieties that are listed in about 75 representative catalogues distributed throughout the United States, with 3 or 4 from Canada. A few of these catalogs are issued from subtropical regions and contain no apple varieties. The catalogs as a whole, however, list around 250 varieties. Had a larger number of catalogs been indexed, a few more varieties would have been found, but the added names would undoubtedly have consisted mostly of old varieties, each listed only by a single nurseryman, and having but a restricted distribution.

While our present list is not entirely comparable with the lists of 1892 and 1910, previously mentioned, it indicates rather definitely a trend toward a reduction in the number of apple varieties being offered to the trade; and not many varieties are planted except very locally, trees of which cannot be obtained from the commercial nurserymen.

It may be assumed, for the sake of the argument, that these 250 varieties have been planted during the past year or two. By the same token, the 472 varieties which were listed in 1910 were probably being planted generally at that time. If the trees have had reasonable care, a goodly proportion of those now living should still represent the varieties offered in 1910. The trees planted in 1892 and still living are 37 years old--but an apple tree at that age should be right in the midline of its usefulness.

On the other hand, considering probable realities, many of the varieties listed in 1892 and 1910, or included in our present index, are of relatively minor importance; they endure in the trade for a time with only a few planters being attracted to them, and then they disappear from the trade lists, leaving no impression behind.

So, one may speculate to his heart's content as to how many varieties of apples are being grown in the United States at the present time: One guess is just as good as another. Nobody knows!

It seems to us that this multiplication of apple varieties, and the fact that new sorts have largely taken the place of those familiar to our grandparents, affords a striking illustration of the necessity for continuing research studies. The apple, you see, is basically a perfect product. It not only has sterling qualities as a food product, but it has consumer appeal--it appeals to the eye, to the nose, and to the taste. In color and form it is a model for those engaged in the devising and manufacturing of commercial products. In other words, it has everything--and yet, yet profitable apple culture rests largely upon the improvements which have been made in this model product of our grandfather's day!

If it has been possible, and necessary, to improve the apple, the need for continuing work with the other crop plants would appear to be rather obvious.

RESPONSES OF STRAWBERRY VARIETIES TO LIGHT

A paper by George M. Darrow and George F. Waldo, entitled "Responses of strawberry varieties and species to duration of the daily light period," has been issued as Technical Bulletin 453 in the Department's series.

The experiments reported on were conducted both in the field and in the greenhouse, and were planned to give an understanding of the responses made by different species and varieties to light conditions in various berry regions, ranging from continuous daylight for 6 weeks in summer in central Alaska to 16 or 17 hours of daylight in June in the Northern States, 12 hours at the Equator, and from 10-1/2 to 11 hours in Florida in winter.

It is recognized that temperature factors are probably equally important in their effects, and it was not possible to give the strawberry plants daily light exposures in intensity and quality in the greenhouse which duplicate field conditions, but in some respects the experiments have shown that greenhouse tests can be made which may be even more informing concerning the responses of different varieties than field tests could be. These experiments, too, have suggested a cause of the rest period in the strawberry and possibly in other plants; and throw some light (no pun intended) on the fact that nearly all European varieties tested thus far grow feebly at the Glenn Dale, Md. station, showing none or few of the valuable characteristics that make them worth growing in different regions of Europe.

ADMINISTRATIVE NOTE.

Publications, Reprints, etc. The NEWS LETTER mentioned sometime back that separates or reprints of articles appearing in the Journal of Agricultural Research were not put out at the time the Journal itself is distributed. These reprints usually come to us 6 weeks to 2 months after the Journal has been mailed.

We should have added that this is the normal condition of affairs. As it happens, the Government Printing Office is just now carrying a heavy burden of work in connection with the printing needs of the many emergency offices, so that we have to expect a good bit more than the usual delay in getting reprints--or bulletins themselves, though we are right now making a special effort to see that such of our bulletins as carry seasonal information get out in time to be placed in the hands of growers ahead of the planting date.

As to the Journal of Agricultural Research: We now get 250 reprints as a rule, of which 50 are needed for the various Bureau sets and files, so that the author may have as many as 200 if he needs them. Of course, if the paper is by two or more authors, we must divide the 200 copies equally among them.

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